JULY 10 1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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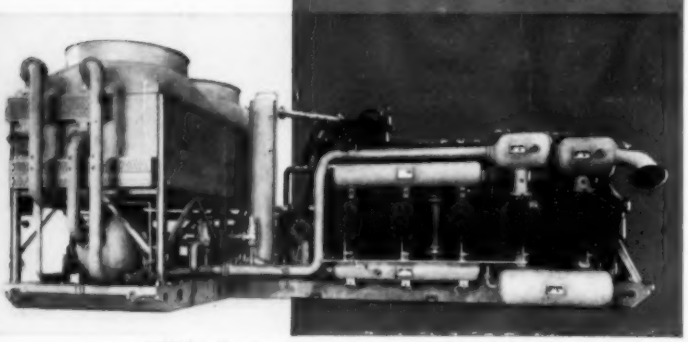
Southwest

DESIGNS, ENGINEERS, BUILDS, AND INSTALLS **PACKAGED** COMPRESSOR PLANTS



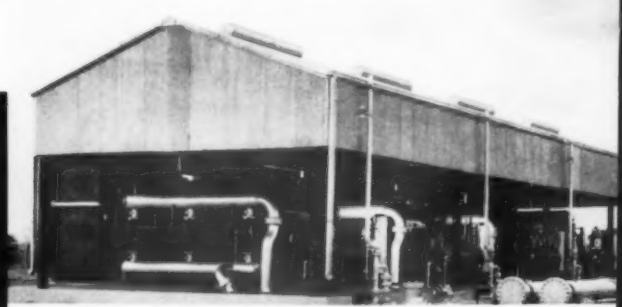
1100 hp. Southwest
Packaged Compressor

WITH SOUTHWEST you not only are able to choose the make of engine driven gas compressor you want, but you can choose the number of services you want from Southwest. You can, for example, get all the advantages of Southwest design and engineering on the best compressor for your purpose. You will not need to re-train personnel or to increase spare parts inventory; yet, you can take full advantage of the vastly improved and superior design of Southwest units.

But, in addition to your packaged compressor plant, Southwest offers its know-how and experience for the design of your complete installation. With a Southwest Packaged Compressor and Southwest Station Engineering, a competent erection crew can install your complete station, properly designed, and at a minimum of time and expense.

SOUTHWEST WILL ALSO BUILD your complete station, including engineering, material, purchasing, field construction, and start-up. Southwest is experienced in the construction of complete plants on land, offshore platforms, submersible or floating barges.

CALL ON SOUTHWEST for the best in packaged compressor stations: the best in design and engineering; the best in station engineering; and the best in complete installation. And after installation, experienced Southwest service personnel are strategically located and are available around the clock to meet your service requirements.



These four 660 hp. Southwest Compressor Plants, in a main line compressor station, handle 100 MMCF/D.

SOUTHWEST INDUSTRIES *INC.*

General Offices: P. O. Box 19392 Houston 24, Texas

Unique barge moves lubricants upriver in bulk for canning at Sinclair's new Birmingport, Ala., plant. Deck warehouse holds packaged products for deliveries en route.

Cleopatra Would Love Sinclair

For the fabulous Egyptian queen, only the rarest of barges served for sailing the river Nile. "The poop was beaten gold . . . the oars were silver," Shakespeare tells us.

As a connoisseur of the finest in river carriers, Cleopatra would be intrigued by this unique barge developed by Sinclair. Not precious metals, but a wealth of new ideas went into it. Designed by Sinclair Refining Company engineers, it is the first ever built to carry many grades of finished lubricating oils in bulk. A special "double skin" insures against contamination, a danger that discouraged such barging before.

Used to move lubricants from refinery to a regional packaging plant, the new barge affords substantial economies in distribution to growing Sinclair markets. It demonstrates concretely the Company's leadership in pioneering new and more efficient operating techniques.

Sinclair

A Great Name in Oil

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Mid-Continent Rotary Tables are *BUILT TO TAKE IT!*

Mid-Continent Rotary Tables are engineered and designed to withstand high rotating speeds and heavy loads under the toughest drilling conditions. Manufactured by Mid-Continent Supply's subsidiary, Unit Rig & Equipment Co., these Mud-Proof rotary tables are constructed to provide maximum strength and rigidity with minimum weight. Only the finest parts go into the Mid-Continent table, assuring smooth, trouble-free operation.

Assembly of tables nearing completion shows grooving for triple labyrinth seal. They will be balanced electronically during final inspection to relieve vibration stresses on bearings and gear.

Mid-Continent Rotary Tables are available in four sizes: **S—17½-A Short; S—17½-A Long; S—21A Long; and S—27½-A Long. For complete information about these rotary tables or any item of drilling equipment, contact your nearest Mid-Continent representative.**

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INSIDE *Slant*

AMUSING, BUT EXPENSIVE

Operating overseas has more than its political problems.

And some of these problems can bring amusing, although expensive, results.

Only recently, an American company, drilling in a foreign country for the first time, had one of its wells blow out.

The rig was destroyed, and the hole was lost.

A decision was reached to drill a directional hole back into the pay section that had been encountered in the prospect which had blown out.

A new rig was moved in to replace the one which had been damaged by the blowout. And directional drilling was started toward the objective—the pay section found in the initial well.

The directional hole was punched down without any difficulty.

But, when drilling had reached the point considered to be the pay level in the initial well, nothing was encountered.

This caused much concern until deviation surveys were run.

To the surprise of all concerned, it was found that the hole was drilled in the wrong direction—because, the company reports, of the rotation of the earth south of the equator.

LeRoy Menzing
EDITOR

THIS IS WHAT YOU WANT IN A VALVE

When you are installing valves for water, oil, gas or mud services, you want safe, positive operation at the lowest possible cost. This is what you get in the Cameron Gate Valve.

This unusual valve employs the Cameron rotating seats, one of which is visible in the picture above. Each time the valve is operated, these rotating seats, on each side of the gate, turn up a new sealing surface. Valve life is extended tremendously and operating cycle cost is reduced to the lowest figure of any valve in similar service offered today.

Cameron Gate valves are available in sizes from 2 to 6 inches and pressures from 960 to 15,000 psi. Next time you order, get what you want – Safety, Service and Top Economy – get Cameron Gate Valves.

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DEPT/Opinions

Views That Make News . . .

"With as many competing oil companies as we have in this country, no one can charge the public too much for gasoline and other products. If any company attempts to gouge the public, a competing company is always ready to sell at a fair price, and get the business."

—A. W. TARKINGTON
Senior Vice-President
Continental Oil Co.

"However tempting it is to say that one day nuclear energy will sweep the board, it may never be as simple as this. Nuclear energy may never become an all-purpose fuel . . . For technical reasons, its contribution is likely to become virtually confined to electricity generation in large power stations, particularly in Western Europe."

—E. A. HIGGINS
Supply & Planning Coordinator
Shell International Petroleum Co., Ltd.

. . . and Letters

Dear Sir:

You stated that Sen. Joseph C. O'Mahoney wants the maximum lease and option holdings increased to 246,080 acres [PW—Jun.19'59,p6]. You also stated that, at present, only 46,080 acres can be held under lease and an additional 100,000 acres under option on federal lands in any one state.

Your attention is directed to the act of Aug. 2, 1954, (68 Stat. 648), commonly known as Public Law 561, which . . . provided for an increase of acreage holdings in oil and gas leases from 15,360 acres to 46,080 acres and increased option holdings from 100,000 to 200,000 acres in any state.

The only change provided in Sen. O'Mahoney's bill . . . is to combine the holdings of chargeable acreage in oil and gas leases with the holdings under options, which makes a total under existing law of 246,080 acres. There is no increase contemplated by Senate Bill 2181 in acreage holdings in the states as distinguished from Alaska.

I wish to take this opportunity to add that I find your magazine most informative on oil and gas matters . . .

LEWIS E. HOFFMAN
Attorney at Law
Washington, D. C.

Dear Sir:

An otherwise excellent article entitled "Gas Hunt Booms in North California" [PW—Jun.12'59,p25] contained two errors of fact:

(1) "Demand for natural gas far outstrips supply in California, with more than 55% of the natural gas coming from out-of-state sources." The fact is that about 70% of the natural gas distributed in Northern California comes from out of state, while Southern California goes out of state for 80% of its gas.

(2) "Utilities are paying 42¢ per Mcf. for imported gas at the state border." The fact is that Southern California Gas Co. and Southern Counties Gas Co. of California, together supplying more than 2.3-million customers in the southern half of the state, are now paying slightly more than 27¢ per Mcf. for gas delivered to the California state line.

J. T. VAN RENSSELAER
Southern California Gas Co.

Dear Sir:

We were interested in the article entitled "Use of Chromatography Grows" [PW—May8'59,p40]. Because of our active participation in the field of industrial chromatography, we feel this article to be both informative and enlightening.

Of particular concern to us was the omission of Beckman as a supplier of this particular product . . . Our market studies indicate that we have in operation more industrial gas chromatographs than all other companies combined . . . One outstanding example is the use of nearly 100 Beckman chromatographs in one chemical plant alone.

ROBERT E. KLEES
Manager
Advertising and Sales Promotion
Scientific & Process Instruments Div.
Beckman Instruments, Inc.

•

In connection with an article entitled "Horizontal Compositing" (PW—Mar.13'59,pp48-53), it has been called to our attention that W. Harry Mayne holds patent No. 2,732,906 dealing with this technique. This patent is controlled by Petty Geophysical Engineering Co., of San Antonio, Tex.

PETROLEUM WEEK *will publish reader comments each week. Address letters to LeRoy Menzing, Editor,* PETROLEUM WEEK, *330 W. 42nd St., New York 36, N. Y.*

DU PONT *Petroleum Chemicals* NEWS

Number 97 in a Series of Bulletins for the Petroleum Industry

JULY-AUGUST 1959

TEL overseas

How DuPont services the oil refineries of the world

Key Men In DuPont Export

WALTER MEES: For the past nine years, Walter Mees, at the left, export manager, has traveled up to 100,000 miles a year helping refiners all over the globe to use DuPont TEL and other additives efficiently. Holland-born and a graduate of a commercial and technical college in that country, he speaks five languages fluently and understands two more.

Before joining DuPont in 1950, Mr. Mees had 12 years' experience with the Royal Dutch Shell group, ranging from drilling to marketing to a management position in Venezuela.

With his broad experience as a producer and marketer of petroleum products, plus his intimate knowledge of world-wide oil operations, Mr. Mees has become well-known for his success in offering DuPont's extensive services and resources to help solve the problems of oil men on all continents.

RENATO S. CARDOSO, above right, as an export account manager, handles much of the world-wide contact work of the Petroleum Chemicals Division.

Brazilian-born Mr. Cardoso studied in schools in Spain and Portugal before entering Columbia University in New York. He then transferred to the University of Pennsylvania to study chemistry.

He joined the Export Division of DuPont in 1936, after working for a year at the General Chemical Company. During World War II he served with the Army Chemical Corps and returned to DuPont in 1946. He was as-

CONTINUED OTHER SIDE

34,000-LB. CONTAINERS like these travel overseas. The one shown here is destined for Puerto Rico. All DuPont TEL sold overseas is made in the United States but not all ports can receive the containers shown, and drums are used in their place.

DuPont tetraethyl lead shipments are a familiar sight at Manaus, location of an oil refinery 1000 miles up the Amazon River . . . at Iquitos behind the Peruvian Andes . . . in all of Japan's refineries . . . and at dozens of other refineries throughout the world.

With TEL and with the many other DuPont petroleum additives sold overseas goes technical service similar to that enjoyed by refineries in the United States.

Generally, the service is of greatest importance. Like helping to design, test and start up TEL blending equipment. DuPont also trains plant personnel and keeps them up to date on such developments as dry dye eduction and DuPont's siphon starter.

Besides all this, there's routine servicing concerned with supplying basic technical literature and films and sales promotional material. Also, supervising the unloading of TEL and keeping it under close observation from manufacturing plant to blending plant. We furthermore take part in industry public relations and we cooperate with foreign governments insofar as public health is concerned.

If you'd like to know more about just what services are available and how they are obtained, please address Mr. Walter Mees, Export Sales Manager, DuPont Petroleum Chemicals Division, Wilmington 98, Delaware.

ADVERTISEMENT—Prepared for the Petroleum Chemicals Division of E. I. duPont deNemours & Company (Inc.)

OVER

DU PONT *Petroleum Chemicals* NEWS

CONTINUED **Key Men**

signed to the Petroleum Chemicals Division at the beginning of this year. Mr. Cardoso speaks four languages.

Diesel fuels with FOA-2 and DMD stay stable, show no sludge

Small quantities of Du Pont Fuel Oil Additive No. 2 and Metal Deactivator can keep a diesel locomotive's injectors sliding free and its filters unplugged even when a blend of economy grade oils is used for fuel.

Recent field tests in Texas showed that adding 1.5 pounds of FOA-2 and 0.05 pound of DMD per 1000 gallons of oil solved an injector sticking problem plaguing several makes of tractors.

In a second test in the same area, just half the amount of additive solved a problem of filter clogging and injector sticking in truck engines.

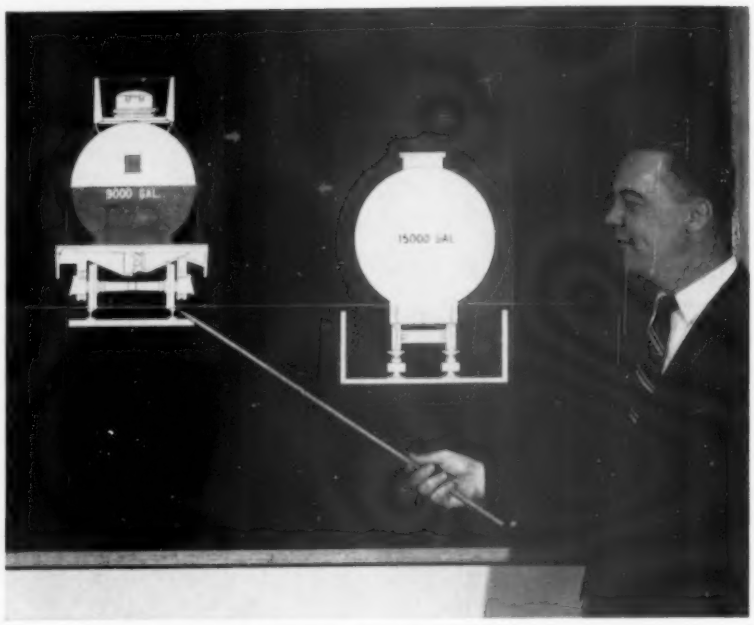
One company with a heavy-duty, high-speed diesel trucking fleet increased the life of its injectors two to three times simply by adding 1.25 pounds of FOA-2 to each 1000 gallons of fuel.

Your Du Pont representative – his office is listed below, right – can fill you in on the details of both these Du Pont additives. They are sold overseas as well as in the U.S.A.

Neoprene-modified asphalt roads show great promise in tests

Twelve different states are currently helping in tests involving roads laid with asphalt modified with Du Pont neoprene synthetic rubber.

The new combination appears to do a better job of holding cover stone in place and preventing weather from breaking through to the roads' bases.



New flannel board gives cues on TEL tank car unloading

To help you evaluate TEL unloading procedures for optimum efficiency, Du Pont has prepared a flannel board presentation which can simulate exactly actual plant conditions.

With the kit provided you can duplicate tank car size, size of weigh tank, and unloading line elevation in exact scale.

Calibrated cards show lift in inches Hg, vacuum needed for lift, and vacuum needed to start flow when you must overcome liquid pressure in the tank.

A slide rule shows quickly the rate of flow you can expect with a system, allowing for the variables of height, pipe friction, and pumping force.

If you're looking for a way to present such facts concisely and graphically to a group, contact the Du Pont representative nearest you. His office is listed in the box below.

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. . . through Chemistry

Du Pont Tetraethyl Lead and other Petroleum Additives

OVER

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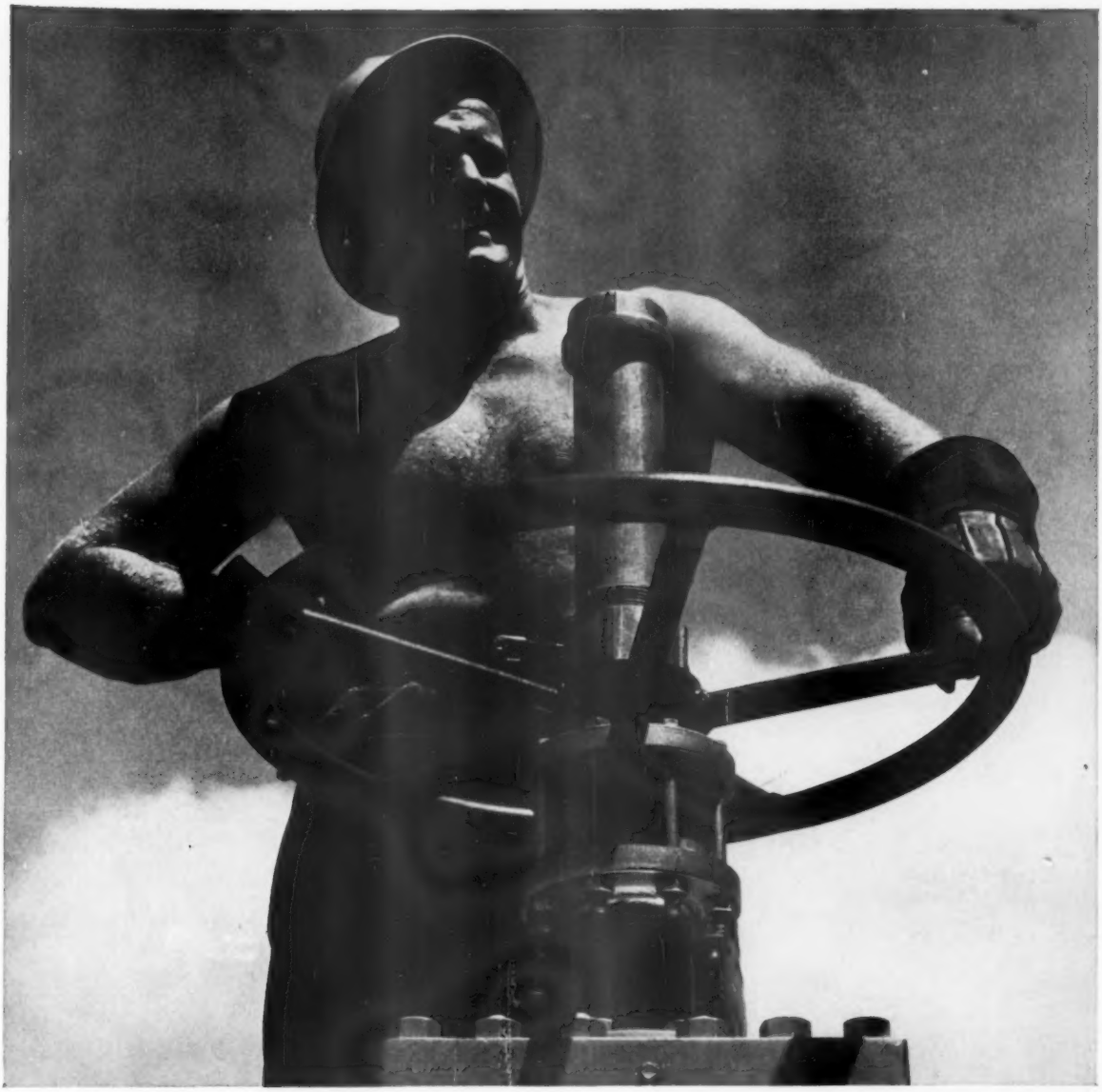

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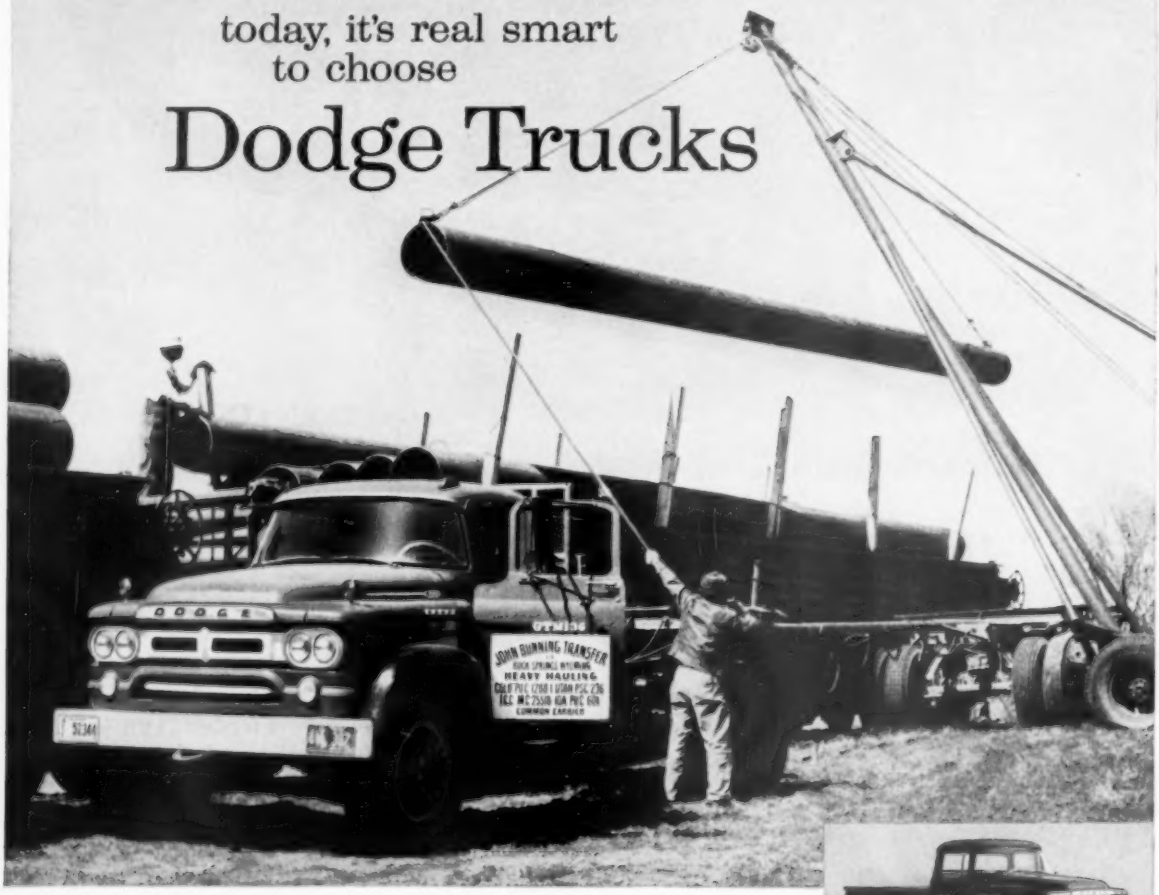
Makes tough jobs a "pipe"

Heavy hauling jobs in the oil fields get a lot easier when your truck is a real heavy-duty truck that's built for brutal going. Dodge Power Giants, for instance, offer horsepowers up to 234 . . . G.C.W.'s to 65,000 lbs . . . auxiliary transmissions that give up to 20 forward speeds . . . more powerful air brakes. Even the instrument cluster, with graduated oil and ammeter gauges and tachometer, is specially designed for heavy-duty truck operation.

You get the easiest, quickest delivery of heavy-duty trucks from Dodge, too, through Dodge's growing network of Truck Centers. Ask your Dodge dealer about it. He has dozens of big, powerful reasons why . . .

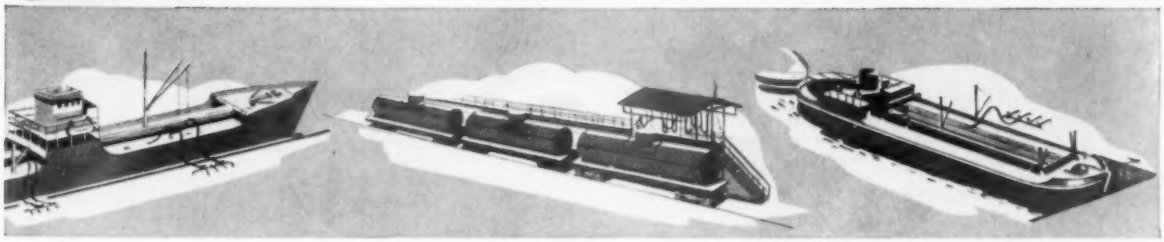
today, it's real smart to choose Dodge Trucks



Four-wheel-drive Dodge Power-Wagons go wherever your job is—on or *off* the highway. Front-wheel drive locks out for ordinary highway use. Power winch, power take-off, pintle hook and brush guard available to meet your special needs. Real load carriers, too . . . G.V.W.'s to 20,000 lbs.

HEWITT-ROBINS HOSE for Every Need of the Petroleum Industry

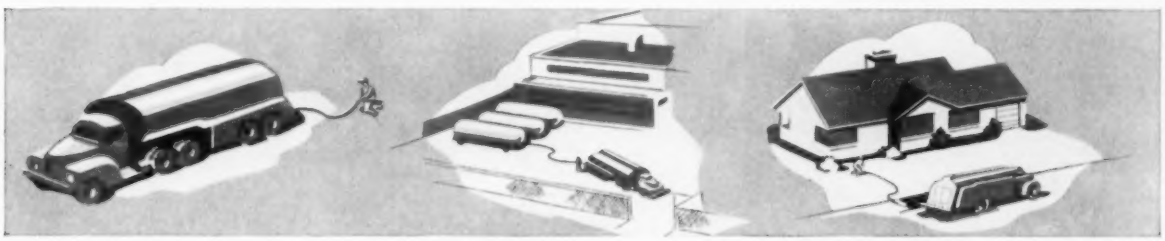
is safer, longer wearing, more flexible



OS & D HOSE. MONARCH is a smooth bore, wrapped fabric, wire-reinforced oil suction and discharge hose that can cut loading time by as much as 50%. AJAX, a rough bore hose, gives excellent service at moderate pressures. Both are crush resistant and will not collapse under pressure.

TANK CAR HOSE. MALTESE CROSS tank car suction and discharge hose provides fast, steady flow at all times. It is especially recommended for "wet" service where the inside and outside of the hose are in contact with gasoline or oil, such as in dome service.

BARGE LOADING HOSE. CONSERVO is a light-weight, low cost oil suction and discharge hose recommended for comparatively low pressure use, constructed with oil resisting tube, smooth bore, strong multiple ply carcass with wire reinforcement, and built-in leakproof nipples.



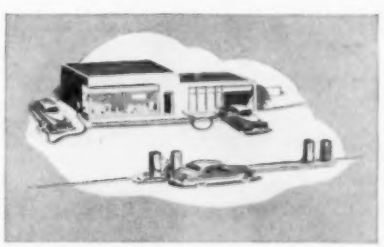
TANK TRUCK HOSE. MONARCH is a triple braid, gasoline resistant, synthetic hose. Where a wire-reinforced construction is necessary to prevent kinking and collapse due to vacuum, HEWLITE tank wagon hose is recommended for efficient, long-wearing service, in vacuum applications.

LP GAS HOSE. TWIN LP GAS HOSE provides both lines as an integral unit permanently adhered to each other. MONARCH, a top quality hose, withstands highest pressures used in LP gas service. MALTESE CROSS is recommended for duty where a stronger, more flexible hose is required.

FUEL OIL & DISTILLATE HOSE. MONARCH, braided and molded or mandrel cured, for gasoline, fuel oil, and distillate services. AJAX molded and braided hose for use in handling gasoline and oil at low pressures and for long lengths of hose on truck reels. MALTESE CROSS 1¾" size for service with higher capacity pumps.

Hewitt-Robins manufactures hose to meet almost every need of the petroleum industry, hose that is seldom equalled for performance characteristics and wear. For special petroleum applications Hewitt-Robins also will manufacture hose to meet your requirements. The hose pictured here represent only some of the types available from stock that have made Hewitt-Robins the leading name in petroleum hose.

To find out how H-R petroleum hose and other Hewitt-Robins products and services can help you, consult your classified directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 7-20.



AIR AND WATER HOSE. SERVALL—Light, flexible molded and braided hose, reels easily, resists weathering, kinking, abrasion, and stripping when dragged over concrete.

GASOLINE PUMP HOSE. MALTESE CROSS ALLPUMP hose is impervious to the action of today's high octane gases, wears longer, is more flexible, takes more of a beating than previous types of pump hose, and handles ideally on all types of gasoline pumps now made.

HR HEWITT-ROBINS

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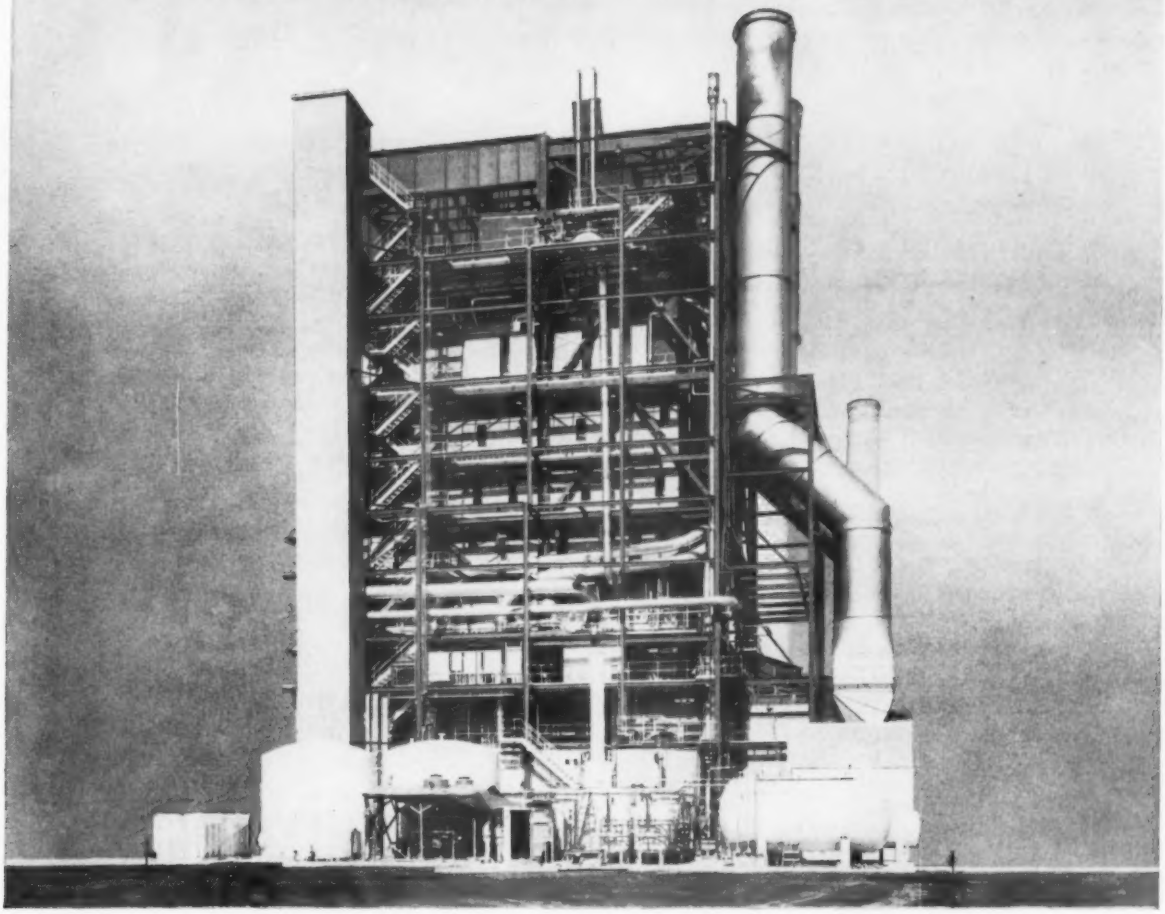
MEMO To: CORROSIVE ENGINEERS

From: AVONDALE (AVONCRAFT DIVISION)

Subject: VERSATILITY AND PORCELAIN ENAMEL



A case in point . . . porcelain enamel was used extensively in this Louisiana Power & Light Company boiler at Sterlington, La., to thoroughly weather proof it from top to bottom. The roof is of porcelain enamel, the entire sides are generally encased with this same material, and porcelain is worked into the curvatures of the pre-heaters and stack uptakes.

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Good Wells Make Good News

Recent Treatments Engineered With the Aid of the "Frac Guide"

July 10, 1959

The "Frac Guide*" -- a Dowell-developed manual used in engineering frac jobs -- is revolutionizing fracturing techniques. Here are four recent treatments that show improved results obtained with the "Frac Guide."

- **Atascosa County, South Texas** (Old Oil Well) This well was completed into the Navarro formation at 5043 feet. After production had dropped to almost nothing, the well was refractured. 15,000 gallons of lease crude and 30,000 pounds of sand failed to help. Then Dowell engineered a treatment with the "Frac Guide." Riverfrac* was selected as the frac service; and 100,000 gallons of fresh water and 100,000 pounds sand were injected down casing, creating a calculated fracture area of 126,000 square feet. Production climbed to an average of 21 bopd and showed no sign of decline after 60 days. Treatment paid out in about 65 days.

- **Beaver County, Oklahoma Panhandle** (New Gas Well) This well, completed through perforations into the Lower Morrow sand at 7831-46 feet, tested 750,000 cfd open flow. Dowell engineers designed a treatment with the "Frac Guide" and recommended Waterfrac. 10,000 gallons of thickened water and 44,000 pounds sand were pumped into the well, creating a calculated fracture area of 50,000 square feet. After clean-up, production was 35 mmcfd on potential test. Other wells in the area, fractured with 20,000 gallons gelled oil and 20,000 pounds of sand -- the standard treatment in the Lower Morrow before the advent of the "Frac Guide" -- usually test only about 8 mmcfd.

- **Natrona County, Wyoming** (New Oil Well) This well produced only 16 bopd from the Second Wall Creek formation at 4256 feet. With the "Frac Guide", Dowell engineered a treatment using Sandfrac*. 38,000 gallons of lease oil with F.L.A.* (Fluid Loss Additive) and 105,000 pounds of sand were injected into the well. The calculated fracture area created was 123,000 square feet. Production 60 days after treatment was 65 bopd. Smaller jobs in this field, using only 1½ pounds of sand per gallon, usually result in only about 35 bopd.

- **Alberta, Canada** (Old Oil Well) Based on core analysis and previous experience, a major operator considered abandoning a well completed in the Cardium at about 4411 feet. Then Dowell engineered a treatment using the "Frac Guide", and injected 5000 gallons of 40 gravity lease crude carrying 25,000 pounds of sand down tubing. A calculated fracture area of 36,000 square feet was created. The operator feels certain that the well will now make its allowable; and that a commercial well could not have been obtained using previous fracturing techniques.

Let your Dowell engineer help you plan your next fracturing job. There is no additional cost. Contact the Dowell office or station nearest you. There are more than 165 locations in the United States, Canada, Venezuela and Argentina. Dowell, Tulsa 1, Oklahoma. *Dowell Trademark.

Services for the oil industry

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DIVISION OF THE DOW CHEMICAL COMPANY

60-Second Summary / WHAT'S HAPPENING IN OIL

AT-A-GLANCE PETROLEUM WEEK Copyright

July 10, 1959

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Many improvements are being made in catalysts. A Petroleum Week survey finds that new catalysts are tougher, more active, more economical, less susceptible to deterioration. . . . p. 66

•

The tempest over wax-impregnated milk cartons is about finished. The government has discredited reports that petroleum waxes contain a cancer-producing agent, and may be dangerous. . . . p. 20

•

The build-up in crude stocks in recent weeks has producers worried. Some say the only cure would be for more states to enact market-demand proration statutes. . . . p. 21

•

A federal court has ruled against "contracts or understandings" that prevent service stations from selling competitive products. The ruling has wide implications in supplier-dealer relations throughout the industry. . . . p. 23

•

The federal fair trade bill will be coming up for action soon. Hearings are in the final stage, with Senate and House votes expected during the current session. . . . p. 84

•

The geology of the Canadian Arctic is considered promising. If oil is found, transportation may be the hardest problem to solve, with the possibility that atomic-powered submarine tankers may be needed for trips under the North Pole. . . . p. 41

•

Closed-circuit television is proving its worth to oil companies. Presently, its principal use is for intercity sales meetings, but the potential is very broad. . . . p. 56

•

Operators of natural gas liquefying plants in Venezuela may have to share their profits with the government. That's hinted in new policy statement. . . . p. 76

•

An offshore test is setting a new record for platform-and-tender drilling in the Gulf. The location is in water beyond the 200-ft. depth mark. . . . p. 29

•

Even informed sources hesitate to predict the decision on the proposed West Coast gas line by the Federal Power Commission. The Supreme Court's CATC decision and staff objections to reserves and prices raise perplexing angles on the Transwestern Pipeline Co's application. . . . p. 19

•

Sales of gasoline pumps are moving up again, possibly ending the worst slump since World War II. . . . p. 82

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK

July 10, 1959

A 12,000-ft. wildcat is scheduled to be drilled in Alaska this Fall. Thirty-three operators in the Koyukuk Basin have pooled $2-million to finance the test, whose location will be set within the next two weeks. The equipment will be moved in this summer and the operators expect to drill throughout the winter. Paul G. Benedum, of the Benedum-Trees interests, is heading the operating committee.

•

The first Middle East Oil will move down the St. Lawrence Seaway shortly. A 20,000-ton Scandinavian tanker is reported enroute to Massena, N. Y., from the Neutral Zone.

•

The Federal Trade Commission's enforcement powers against exclusive dealing and price discrimination are being tightened. The President is expected to sign a bill that will make orders issued under the Robinson-Patman and Clayton antitrust acts final in 60 days, unless appealed to the courts.

•

A group of 19 U. S. and European firms decided this week to go ahead with the 466-mi. Mediterranean-Rhine pipeline, as soon as the French government approves. The 30-in. line is slated to start operating in January, 1963, with an initial capacity of 160,000 b/d. Four refineries are planned in connection with the line, two in France by French companies, and two near Karlsruhe, Germany—a 60,000 b/d to 85,000 b/d plant by Jersey Standard, and one by a group of German companies with Socony Mobil.

•

Plans for a 60,000-ton nuclear tanker are in the works. The congressional Joint Atomic Energy Committee told the Maritime Administration this week to make recommendations for the design by next April. The tanker would cost about $32-million and would have a speed of 18 knots.

•

Continental Oil Co. has announced plans for a 155-mi. products pipeline from Artesia, N. M., to El Paso, Tex. Also scheduled for construction this summer are a 77,500-bbl. terminal at El Paso and a 66,000-bbl. terminal at Albuquerque, N. M.

•

Construction of a $5.2-million refrigerated LPG plant at Ras Tanura, Saudi Arabia, will start in September. Arabian-American Oil Co. says facilities will include two 80,000-bbl. steel storage tanks, loading pumps, and a 22-in. line to carry the liquid to the pier (PW—May29'59,p15).

•

The House Interior Committee has approved a bill boosting oil and gas lease holdings in Alaska to 600,000 acres. The present maximum is 100,000 acres in leases and 200,000 acres in options. The new bill would eliminate the lease-and-option distinction.

" . . . supply stores have not faltered in giving good service"

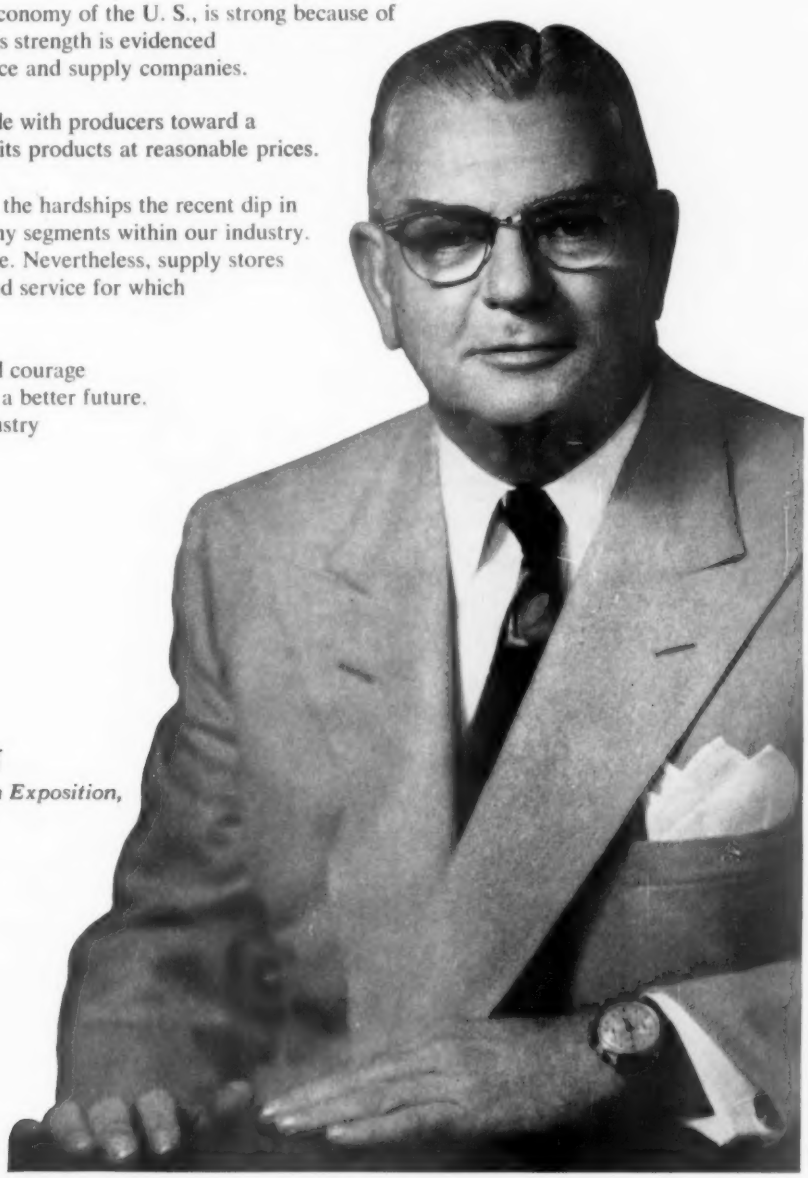
"There are Prophets of Gloom who continuously cry that 'We are running out of oil.' I am not one of them because I am firmly convinced that America will not run out of oil in the foreseeable future—provided our system of private enterprise is allowed to take its natural course.

"The oil industry, like the overall economy of the U. S., is strong because of such a system. One example of this strength is evidenced by the industry's equipment, service and supply companies.

"Those companies strive side by side with producers toward a common goal: Adequate oil and its products at reasonable prices.

"All of us in the industry recognize the hardships the recent dip in the oil activity has worked on many segments within our industry. The supply industry is one of these. Nevertheless, supply stores have not faltered in giving the good service for which they long have been noted.

"This is the type of doggedness and courage that licks problems and builds for a better future. And, certainly, the petroleum industry has a great future."



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President, International Petroleum Exposition, Chairman of the Board and Chief Executive Officer, Warren Petroleum Corporation

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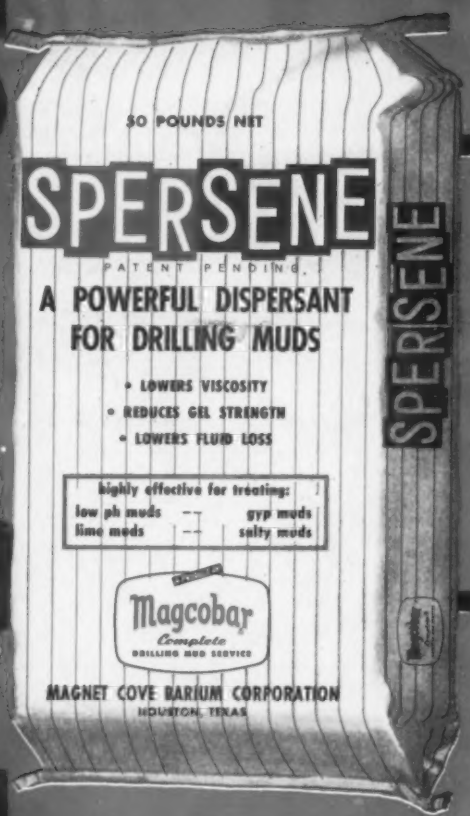

another *well done*

Spersene, a very versatile thinner, performs well in any mud. Its powerful thinning action combined with low cost make it a unique chemical for treating any drilling mud. You need no longer stockpile a number of dispersants at your well to meet different mud conditions. Now, you can simplify mud treatments with this new all-purpose dispersant and cut mud chemical costs, too.

Spersene costs less when you buy it; costs much less when you use it. As the tables show, Spersene lowers viscosity more effectively, at less cost, than any of today's leading thinners. This means a lower cost per barrel with Spersene. When projected to well volume, it means surprising savings. Whether you are using high or low pH mud, gyp mud, lime mud, or seawater or brackish mud, laboratory tests prove that Spersene

	Amount (pounds)	MATERIALS	Average Cost (Cents)	VISCOSITY (Yield Point-lb./100 ft.^{2})
gyp muds	1	Spersene	16.5	7
	1	Thinner A	18.5	**14**
lime muds	3.0	Spersene	49.5	6
	3.0	Thinner A	65.5	**16**
low pH muds	1	Spersene	16.5	8
	1	Thinner A	18.5	12
	2	Thinner B	20.0	20
	1	Thinner C	18.0	18
	1	Thinner D	17.0	31
sea water muds	4	Spersene	66	1
	4	Thinner A	74	**3**

is more efficient on basis of costs than any other dispersant. And it is very stable against the upsetting effect of salt.

Spersene is one more specific Magcobar solution to the problem of high drilling costs, one more development from the Magcobar laboratories that will increase your profit through more economical drilling. From spudding in to total depth, you'll find that the right products *used right* by Magcobar engineers can cut your drilling costs, too. Write for the new bulletin on Spersene.

Wherever your drilling operations, you can use Magcobar engineering and products. There are more than 500 stockpoints in the U.S. and Canada. Elsewhere, write Foreign Operations, P. O. Box 6504, Houston, Texas

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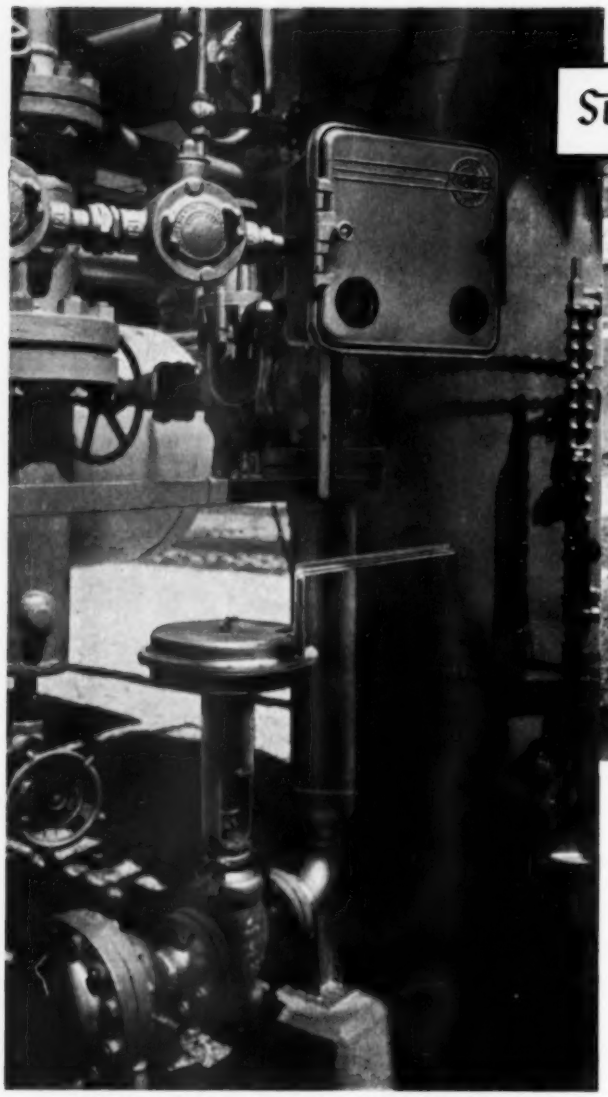

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West Coast Gas Faces New Fight

Transwestern Pipeline Co.'s plan to move West Texas gas to California ran into unexpected road blocks last week—and even the best informed sources hesitated to predict the outcome.

Transwestern has been seeking certification for a proposed $191-million pipeline to carry 300-million cf/d of natural gas on an 1,800-mi. trip to Southern California. It filed its application 15 months ago.

Federal Power Commission staff opposition to examiner Harry Frazee's recommendation of approval is the principal complication. In the background, however, is the Supreme Court ruling in the CATC case, which urged price-conditioned contracts.

The bulk of Frazee's recommendation undoubtedly was formulated and written before the CATC (Continental-Atlantic-Tidewater Cities Service) ruling came down (PW—Jun.26'59, p16). He made no reference to it at all.

Normally, an examiner's recommendation is accepted by the full FPC. But in this case, snags have developed on several fronts.

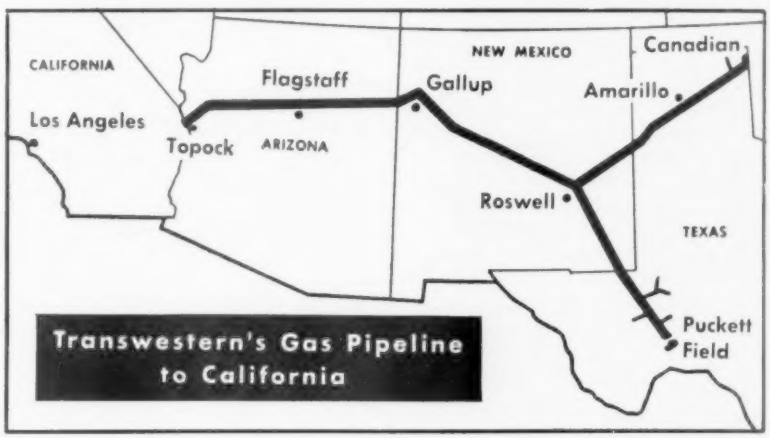
The FPC staff wasted no time in registering its opposition. Chief Counsel David Lichtenstein declared brusquely that the Frazee recommendation "isn't worth the paper it's written on." He contended that the Supreme Court had "pulled the rug from under" the Frazee report.

Also opposed is the California Public Utilities Commission. California is interested in getting the gas as fast as possible, but questions whether field prices offered are "in the public interest."

Oral arguments before the full FPC will get under way July 14. Lichtenstein indicated that staff opposition will focus on two key points: reserve requirements and prices.

Frazee, in his recommendation, felt the reserves picture was sound, despite the fact that commitments didn't add up to 20 years. Where prices were concerned, he pointed out that Transwestern had tried to buy the gas as cheaply as possible, but the firm simply couldn't get any better deals.

Proposal calls for gas to be delivered at the California border at prices ranging from 35¢ to 45¢ per Mcf. The more gas delivered, the lower the price.



Transwestern's Gas Pipeline to California

Transwestern plans initially to sell gas to Pacific Lighting Gas Supply Co., of Los Angeles, which would resell it in Southern California through two affiliated companies: Southern California Gas Co. and Southern Counties Gas Co.

In anticipation of the certification, Transwestern already has 33 contracts with producers, pipe stored at 25 strategic locations, and all rights-of-way purchased or under option. Pipeline crews are ready to swing into action as soon as FPC gives the signal.

Long-term producer contracts are with Gulf, Pure, Lion, Humble, Sun, Union, Warren, British-American, Curtis R. Inman, Richardson & Bass, G. H. Vaughn, Jr., Superior, Magnolia, and Hunt Oil Co. In addition, Transwestern has a short-term contract with Cities Service.

Purchase agreements are 20-year deals, and generally are classified in two groups, on the basis of price and location.

The first group includes the West Texas-Permian Basin area. Contracts there, except for Richardson & Bass, call for sale and delivery at initial prices ranging from 12¢ to 16¢ per Mcf., with 1¢ per Mcf. escalation every four years. The price includes the state tax.

The Richardson & Bass contract is for 21.8¢ for the first ten years, and 27.2¢ for the second ten years.

A large part of the Richardson & Bass gas is residue now being sold to El Paso Natural Gas Co. by the Sid Richardson Gasoline Co. from the Keystone plant, in Winkler County, Tex.

The second group of contracts is in the Panhandle-Hugoton area. Except for Cities Service, they have an initial price of 23¢ per Mcf. for the first ten years with no escalation, and 26¢ for the remaining ten years.

In these contracts, Transwestern has extraction rights, and the producers must pay the severance tax.

The Cities Service contract is for five years at a flat 21¢ per Mcf. Sales will be made on an interruptible basis at a rate of 49.7-million cf/d. Delivery will be via Cities Service's main transmission lines in Texas County Okla.

The Commission staff and the California PUC put on some brief testimony against the proposed prices during the hearing, but failed to impress the examiner on this score.

The FPC staff won a minor victory when Frazee agreed to one stipulation on financing—which Transwestern isn't expected to oppose.

Transwestern has proposed to finance $142-million (74% of the cost) by issuing first-mortgage pipeline bonds; $20.7-million (11%) through interim notes at 5% interest, and $29-million (15%) in common stock.

The staff argued that Transwestern was not "attaining the standard of safety and stability" established by FPC in prior hearings; that the debt

securities should not be greater than 75% of total capitalization.

Frazee said he would be willing to waive FPC's usual requirements in view of economic conditions and hard-money policies.

But he required, as a certificate condition, that Transwestern pay no dividends on its common stock until the 5% interim notes are converted into preferred or common stock, or until the total debt, including the notes, is reduced to 75% or less of total capitalization.

Frazee's recommendation made what seemed to be a strong case for Transwestern. In addition, he noted that the producers and purchasers were satisfied, and he could see no reason for not approving it.

On the matter of prices, he pointed out that Transwestern had signed 33 contracts, had made offers to 51 other producers, and had talked to 96 more on 137 possible gas sources.

"The record is replete with testimony to the effect that Transwestern officials meticulously went over the known areas of supply of natural gas in an endeavor to find additional supplies of gas that might be made available for the California market at lower prices," he said.

He noted that another California company recently offered 23.4¢ per Mcf. for southern Louisiana gas, but couldn't make a deal.

He said this example showed that prices being paid by Transwestern in Texas are the best possible, and that if the Texas gas wasn't supplied, the Louisiana gas from the other company would be much costlier.

He went on:

"Transwestern has been able to acquire this vast reserve of gas, together with the dedication of a large amount of potential oil and gas producing acreage—on which 16 producing wells have been drilled since Jan. 1, 1958—at an average cost of approximately 19.36¢ per Mcf, which price includes the Texas severance tax.

"This is an accomplishment of some proportion, for no pipeline company in recent times . . . has been able to assemble such a quantity of reserves of natural gas at such a low average initial cost."

The proposed Transwestern line would start in Panhandle-Hugoton area and the West Texas-Permian Basin area, and would end at the Arizona-California line, near Topock, Ariz. The main laterals join near Roswell, N.M.

Proposed compressor stations have a capacity of about 41,000 hp. The line is designed basically, however, to handle more than twice its initial load (300-million cf/d) through addition of more compressor horsepower.

Scientists Scuttle Wax Cancer Scare

With firmness and dispatch, the Federal government has discredited reports that milk containers are dangerous because cancer-producing agents have been found in petroleum waxes.

News stories raised the specter in recent weeks. They were based on a research program which the government and the milk and petroleum industries initiated quietly two years ago.

Lifted out of their proper perspective, they had the effect of alarming the general public, and worrying many oil men who did not know the facts.

Arthur S. Flemming, Secretary of Health, Education & Welfare, personally discounted the reports. He declared that scientists have found "no indication of a health hazard" in petroleum waxes.

He conceded that one of the many waxes investigated did contain a known carcinogen (1, 2, 5, 6-dibenzanthracene). But this, he said, was an isolated case, and the ratio was only one part in a million.

It was not enough to be considered dangerous in its own right.

Flemming also stressed that this carcinogen has not been shown to produce cancer in humans, although it has had positive results in laboratory animals.

He said this wax was withdrawn immediately and voluntarily from the market.

Flemming's statement, which resulted from a flood of inquiries to the Public Health Service and the Food & Drug Administration, quieted fears and clarified the picture for all concerned.

He said the Public Health Service and the Milk Industry Foundation arranged to collect waxes used by dairies in 1956. These were sent to the National Cancer Institute, which, in turn, relayed 24 samples to the Chicago Medical School for analysis.

In the fall of 1957, Dr. Philippe Shubik, of the school's division of oncology, reported that one sample contained a carcinogen. This was communicated to the Milk Foundation.

The milk and petroleum industries joined hands quickly to extend the research program and obtain more conclusive information.

The American Petroleum Institute made available $100,000 a year for five years to support additional studies by Dr. Shubik. The milk officials met with the Public Health Service to map out a campaign to insure that the waxes used were free from health hazards.

Additionally, Dr. Shubik was supplied with 26 representative waxes from the petroleum industry. By this time, he had refined his experiments to the point that one part in a half-billion could be detected. No dibenzanthracene was found in any of the 26 samples, Flemming said.

In another leg of the inquiry, samples of the original 24 waxes were sent to the University of Southern California. It confirmed Shubik's preliminary findings—that one wax did contain an insignificant amount of carcinogen.

Flemming's comment was unequivocal:

"The results of these studies have been reviewed by scientists of both the Public Health Service and the Food & Drug Administration.

"I am advised that the findings are not final, but that no indications of a health hazard have been found. The Food & Drug Administration advises that there is at present no basis for action concerning these waxes under the Food, Drug & Cosmetics Act."

Further research will be done.

Flemming said the Public Health Service may make its own study if its budget is approved. Frank M. Porter, president of the American Petroleum Institute, said the oil industry's own studies would go on indefinitely.

The petroleum industry has a big stake in the wax business.

Wax, one of the earliest specialty products of the oil business, is extracted by solvents.

Recent statistics show that production of petroleum waxes amounted to more than 1.5-billion lb. in 1957. The output accounted for virtually all of the demand—roughly 98%. The product value is in excess of $110-million.

Chief users of petroleum waxes are the firms which impregnate milk cartons and similar containers. Recent statistics indicate that these consumers account for 85% of the total market.

Producers Say Wider Proration Needed

The rapid build-up in crude inventories in recent weeks is adding to the seriousness of the general oversupply situation.

High rates of refinery operation during most of the first half of the year kept crude stocks generally in check, even though products inventories, particularly gasoline and distillates, climbed above so-called "desirable" levels.

As recently as early April, crude stocks were at or below the level (253.6-million bbl.) that top industry officials told the Texas Railroad Commission was desirable.

But since that time, the crude inventory situation has deteriorated.

Refinery operation rates were trimmed some in April and May. And even though runs moved higher in June, crude inventories have jumped by 18.4-million bbl. in the past two months, to 270.4-million bbl.

With product inventories already uncomfortably high, and with allowables cut sharply in some states, producers are looking at the impact on stocks of production from nonprorated states.

While not all states whose oil regulatory bodies prorate to market demand have cut back recently, most of them have. Producers in Texas have been hit particularly hard.

Texas producers are generally limited to a nine-day producing pattern in July, two less than in June and three under the peak producing schedule of the year.

And Texas producers continue to recall the five months of last year when they were restricted to eight- and nine-day schedules.

Producers in some prorated states also have been critical of Louisiana's practice of continuing to hold to a constant percentage (34%) of the March, 1953, depth bracket in setting allowables. This results in a small but steady rise in the allowable each month. The increase has averaged from 8,000 b/d to 10,000 b/d a month.

The growing crude production from the Rocky Mountain area, which producers in the Southwest say is grabbing their markets, is of particular concern.

Per-well production from the Rocky Mountain states, primarily Wyoming and Utah, neither of which prorates to market demand (table below), has increased so sharply during the period that other states have had to hold a tight rein on allowables because of oversupply.

Basically, producers are not opposed to increased production in any area if it's due to an increase in the number of wells. They realize that drilling in the newer areas, such as the Rockies, is bound to result in more production.

What they do object to is "open" production from existing wells in any area when producers in other states have had to reduce their per-well output sharply because of proration to market demand.

They cite the restraints imposed in Texas, where the daily average production last year, averaging 2,577,000 b/d was the smallest for any year since 1950, and the production per well was the smallest since the state became a major producer.

All other major prorated states last year produced less per well per day than at any time in the past ten years.

With the exception of Illinois and California, most principal nonprorated states have per-well producing rates sharply above the average of the prorated states.

Paul R. Schultz, president of the Oklahoma Independent Producers Assn., has asked the Interstate Oil Compact Commission to call the dangers of oversupply to the attention of its nonprorated state members.

He recently wired Gov. J. Hugo Aronson, chairman of IOCC, that, "If the producers and state legislative bodies in those states fail to regulate themselves, it is entirely possible that the federal government may step in with sweeping controls over the producing segment of our industry."

Also, domestic producers view with some concern the growing production that is reaching the U. S. Midwest from Canada's unprorated Saskatchewan.

Since Canadian oil is exempted from mandatory import controls, the unprorated production from Saskatchewan has been moving into the Midwest at delivered prices as much as 17¢ a bbl. below the price of U. S. crude.

The lack of proration in Saskatchewan has also raised the ire of some Alberta producers, who are subject to market demand proration. At one time, Alberta oil accounted for nearly all of the limited volume moving into the U. S. Upper Midwest. But now Saskatchewan crude accounts for about 60% of the nearly 70,000 b/d sold in the area.

Recently, Skelly Oil Co., which produces in the Weyburn field of southwestern Saskatchewan, wrote to 14 other companies with production

Average Per-Well Crude Production

(barrels daily)

	Prorated States					Nonprorated States							
Year	Texas	Louisiana	Oklahoma	New Mexico	Kansas	Illinois	Wyoming	Colorado	Utah	Montana	Nebraska	California	Total U. S.
1949	17.5	50.6	7.7	23.8	9.7	6.6	27.5	89.1	—	8.0	16.4	35.9	11.4
1950	18.3	50.3	8.1	22.4	9.7	6.2	32.9	84.0	—	6.9	42.4	34.2	11.8
1951	21.0	52.3	9.0	23.4	9.9	6.0	34.6	94.7	—	7.3	35.0	33.7	13.1
1952	20.4	51.7	8.9	24.4	9.5	6.0	32.6	90.2	—	7.6	26.0	32.5	13.0
1953	19.7	51.1	9.0	27.4	9.1	5.7	40.0	89.8	—	9.4	53.5	31.8	13.1
1954	18.0	44.7	7.9	27.2	8.9	6.1	42.5	85.2	—	11.4	47.4	30.1	12.6
1955	18.4	42.7	8.2	27.7	9.0	7.5	40.4	78.2	—	12.6	45.8	28.8	13.2
1956	17.9	41.2	8.4	26.6	9.2	7.4	40.5	78.2	—	17.0	54.8	27.1	13.2
1957	16.1	42.2	8.1	25.7	8.9	6.7	41.4	69.5	71.0	20.2	57.8	25.5	12.8
1958	13.6	38.0	7.4	23.6	8.5	7.1	42.4	60.4	179.6	20.1	50.3	23.5	11.7

in that area of the province on the subject of a "province-established method of proration and allocation" in the area.

Skelly said there is a "need for co-operative action" on proration in the Weyburn, Midale, and West Kingston fields in Saskatchewan.

Some producers have expressed concern over the continued high volume of foreign oil used by domestic refiners, despite the relatively tighter restrictions on imports imposed by mandatory regulations.

Crude runs to refineries in January, for example, when imports were beginning to mount sharply under the old voluntary control plan, averaged 8,229,800 b/d.

Of that, 977,600 b/d, or 11.88%, was foreign crude.

But for June, the latest month for which data is available, preliminary figures show that runs are averaging about 8-million b/d, of which slightly more than 1-million b/d, or 12.76%, consisted of foreign crude.

And while runs of foreign crude have increased, inventories of crude of foreign origin also are up. As of the end of June, foreign-origin crude stocks totaled 18.6-million bbl., up from 14.8-million bbl. at the end of May, and 13.9-million bbl. at the end of April.

U.S. Funds May Aid Japanese Refiners

U.S. oil men anticipate a reversal very soon in Japan's attitude of restricting expansion of refining capacity.

Already the Far East's largest refining nation, with a capacity around 550,000 b/d, Japan is slated to take giant strides forward with several new plants planned, some by U.S.-affiliated Japanese companies.

A final government decision is expected at a Foreign Investment Council meeting this week.

The possible approval would open the way for new refinery expansion.

The support of the Ministry of International Trade Industry (MITI) has already been won by new arguments presented by Japan's petroleum association.

MITI now recommends Finance Ministry approval of current applications for foreign investments to expand refining facilities.

That should pave the way for government approval of Maruzen Oil Co.'s $7-million loan from Union Oil Co. of California.

The loan, to be made by Union's affiliate, Unoco Trading Corp., is to be repaid in ten years at 5% interest.

Maruzen will use the money to pay for part of its $14-million Matsuyama refinery expansion and modernization program. The company's over-all current development program totals an estimated $19.4-million, and includes the setting up of a new petrochemical plant at Matsuyama.

Construction of a new 20,000 b/d topping unit at the Matsuyama refinery is already under way. It will boost Maruzen's total refining capacity to 67,500 b/d by the end of 1960.

Maruzen had been applying for government approval to expand since last fall. But the Finance Ministry had been hesitant.

Its reasoning has been that there was an "excessive trend for investment" while the refining industry was operating considerably below capacity.

The Finance Ministry wants foreign exchange investment held in line with a balanced refinery growth.

MITI has been assured by Japan's petroleum association that increasing demand insures that expanded refining operations will never fall below 80% of capacity.

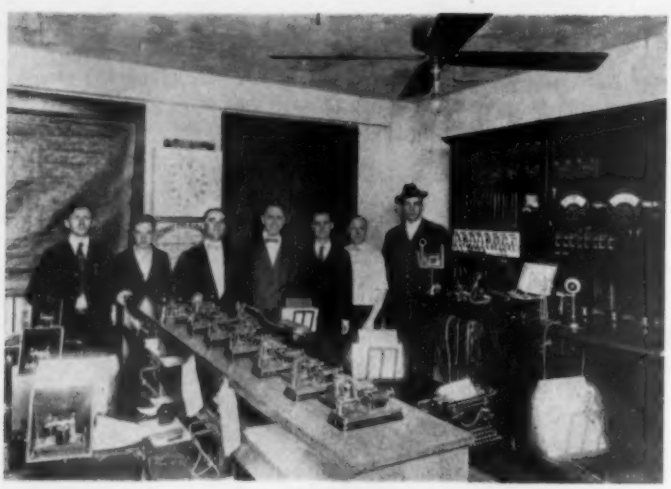
The association pointed out that some of the existing facilities are already obsolete.

MITI, in reviewing the whole situation, had earlier revised the 1959 capital expansion program downward from 42-billion yen to 37-billion yen.

The government is also expected to approve a Caltex application for a $5.5-million expansion of Nippon Petroleum Co. The latter is owned 50-50 by Caltex and Nippon Oil.

Nippon Petroleum is planning to double its present capitalization of $11-million to expand refining facilities this year.

Oil Man's Album



The Day When the 'Bug' Was the Thing

Telegraphers were in demand when Magnolia Petroleum Co. first set up its own telegraph system to provide communication between the growing network of pipelines and marketing outlets. But that was 1922. Today, high-speed teletypewriters and voice communications, the latter sometimes on microwave frequencies, speed information.

(No. 31 of a Petroleum Week series)

Court Voids 'Exclusive' Dealer Ties

The ruling in an antitrust case against Sun Oil Co. has a wide impact in supplier-dealer relations.

A federal court last week ruled against "any contract or understanding" between suppliers and dealers that prevents dealers from selling competitive products at their stations.

The ruling not only prohibits any written contracts that are designed to turn dealers into exclusive distributors of a supplier's products, but also frowns on any oral or tacit agreements that prevent dealers from handling and selling competitive products.

The ruling has wide implications in supplier-dealer negotiations, and will cause many suppliers to review their agreements with dealers to make certain that no exclusive-distribution provisions are either implied or apparent.

The ruling was made against Sun Oil Co. in the U.S. Court for the Eastern District of Pennsylvania. Sun was enjoined from entering into or enforcing any contract or agreement that prevents dealers from handling competitive products.

In its listing of facts, the court noted that Sun pursued a policy of "requiring its independent dealers to handle its gasoline exclusively and to force these dealers to discontinue the advertisement, display, and sale of competitive brands of motor oils and TBA."

The court also found that Sun "has induced and coerced its independent service station dealers to enter written contracts supplemented by oral or tacit agreements and understandings, having the purpose, intent, and effect of requiring them to purchase its petroleum products and TBA exclusively."

These practices, the court pointed out, had the effect of restricting competition by preventing small suppliers of petroleum products and TBA items from gaining access to outlets for their products.

The ruling has the effect of outlawing any supplier-dealer agreement that tends to hamper sales of competitive products by dealers.

Many of the Sun practices cited by the court did not involve the sale and handling of competitive products. Nevertheless, these practices tended to prevent dealers from handling competitive products, the court found.

For example, Sun required its dealers to purchase one quart of motor oil for every 65 gal. of gasoline, according to the court. Since this ratio exceeded the average sales ratio in Sun's marketing area, the requirement effectively dissuaded many dealers from buying any motor oil that was not included in Sun's ratio agreement.

The court also found that Sun offered refunds to its dealers, based on the quantity of Sun's motor oils, lubes, and TBA that they sold.

"The refunds are not conditioned upon exclusive dealings in Sun's products," said the court. "However, it must not be overlooked that the purpose of such refunds is to encourage the dealers to look to Sun as a central source of supply both for petroleum products and TBA."

The court was particularly concerned with the practice of threatening dealers with the loss of their supply contracts if they did not adhere to a suppliers wishes.

The court found that Sun's salesmen were instructed to warn dealers that, if they did not eliminate competitive motor oils and TBA, "their agreements would either be cancelled or not renewed, and a new dealer obtained to take their place."

Such warnings had the effect of inducing many dealers to hew to Sun's desires, said the court. The "economic hardship" and "risk of business failure" that dealers face when threatened with the loss of their contracts are serious deterrents against bucking a supplier's demands, the court pointed out.

No decision has been reached on an appeal.

Joseph N. Pew, Jr., Sun's chairman, implied last week that the decree will not have any effect on Sun's marketing operations. "Actually, the injunction that has been issued against Sun Oil" Pew said, "does no more than enjoin the company to continue to obey the law. It will not, we believe, require any change in our current methods of doing business."

Most of the incidents recited by the court, Pew said, "took place many years ago, many as long as 25 years."

Crude Origin Will Be Studied

New theories as to the origin of petroleum will be investigated at the Bureau of Mines Petroleum Experiment Station, Bartlesville, Okla.

H. N. Dunning, who will direct the studies, says initial work will include investigation of particle size, and the bearing of these particles on the properties of various crudes, including producing and refining characteristics.

A key instrument in the crude-origin study is an analytical ultracentrifuge, which has just been ordered, for use in studying the colloidal nature of crude.

The device, which costs about $20,000, is being built by Spinco Division of Beckman Instruments Inc.

Delivery is expected in about two months.

The Bartlesville station has had a preparatory ultracentrifuge in use for some time, but it allows particle studies only after separation has been accomplished.

With the analytical centrifuge, investigation can be carried out during the actual process of centrifugal fractionation.

Centrifugal separation of crude particles is considered superior to other methods for research work, because it is a purely physical process that involves little or no alteration in chemical structure.

Chemical, electrical, or thermal separation methods tend to alter particle make-up.

A force 200,000 times that of gravity is developed by an ultracentrifuge. At this acceleration, 1 oz. of crude oil weighs approximately 6 tons.

The outside of the centrifuge's rotor reaches a speed of 50,000 rpm.—roughly 1,200 mph., or close to twice the speed of sound.

Because of the tremendous air friction that would be created at this speed, the centrifuge must be operated in a vacuum to prevent overheating.

The station's work with crude particles will be in the realm of pure research, although other investigators have performed similar studies in the past.

Paul Witherspoon, of the University of California, pioneered the use of analytical ultracentrifuges in the study of crude petroleum.

And Brooklyn Polytechnic Institute also has performed crude studies with its centrifuge under contract to the research affiliate of a major oil company.

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What's New / IN THE INDUSTRY

American Oil Co. resumed limited operations at one of its two struck refineries this week. The company said it would attempt to continue some operations at its 145,000 b/d Texas City (Tex.) refinery to meet customer requirements. That plant and American's 43,000 b/d refinery at El Dorado, Ark., were struck last week by the two locals of the Oil, Chemical & Atomic Workers in a dispute over job classifications.

Indiana Oil Purchasing Co. is continuing to prorate its take of Texas, Louisiana, and Arkansas crudes as a result of the strike. The company halted all buying in northern Louisiana and Arkansas, involving about 38,000 b/d. Tentatively, Indiana is taking 40% of its normal purchases on the Texas-Louisiana Gulf Coast and from Scurry County, West Texas.

Purchaser proration, not connected to the strike, is spreading to other areas. Pure Oil Co. set a 50 b/d maximum per well on its sweet crude purchases in the Colorado-Nebraska portion of the Denver-Julesburg Basin, matching an earlier purchaser proration move in the area by Sinclair Crude Oil Co. And in Oklahoma, Kerr-McGee Oil Industries, Inc., started its previously announced purchaser proration—limiting its take to 65% of its April runs, or about 55,000 b/d.

•

Independents with crude supply from the Middle East and Venezuela reportedly are seeking processing deals in Mexico. Petroleos Mexicanos, the government oil company, has asked the government for permission to run such crudes offered, amounting to about 20,000 b/d, either on a straight fee basis, or a retention of certain cuts from the crude for petrochemical manufacturing operations.

•

Maryland has become the 30th state to join the Interstate Oil Compact Commission. Gov. J. Millard Tawes recently signed the Interstate Compact to Conserve Oil & Gas, making it eligible to affiliate with IOCC.

•

Interior Secretary Fred Seaton has intervened once again to grant an import allocation to a late-filing company. He granted Copeland Terminals, Inc., an allocation of 12 b/d of residual fuel oil. Earlier, Imports Administrator Matthew V. Carson, Jr., turned the application down because it was filed late. Previously, Seaton had intervened to grant Hunt Oil Co. an allocation after Carson had denied it due to late filing.

•

West German crude production is expected to average about 100,000 b/d in 1959 and to rise to 112,000 b/d by 1963, according to the Assn. of German Oil Producers. Production last year averaged 88,600 b/d, up 11.9% over 1957.

•

Trans Mountain Oil Pipe Line Co. plans to run 114,000 b/d of Canadian crude to Vancouver and the Puget Sound area this month. During June, runs averaged 106,638 b/d, compared with 82,417 b/d in June, 1958.

•

Donovan P. Dugan has been elected president of Tuscarora Pipe Line Co., Ltd., succeeding John W. de Groot, who retired July 1 after more than 40 years' service with Tuscarora and other Esso Standard Oil companies. Dugan was previously vice-president and superintendent; he started with Tuscarora in 1931.

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* *From the article, "Evaporation Loss Breakthrough," appearing in the April issue of Petroleum Marketer.*

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Looking Ahead in Washington

Mc-Graw-Hill
Washington
Bureau
July 10, 1959

Rep. James Roosevelt (D., Calif.) is looking at the consent decree in the West Coast antitrust case. Roosevelt, chairman of a House small business subcommittee on marketing, has ordered his staff to make a preliminary investigation of the decree, in which the Justice Dept. dropped antitrust charges against six major oil companies. Whether the decree will become part of Roosevelt's anticipated hearings on gasoline marketing depends on the preliminary staff study.

Roosevelt's hearings on relations between gasoline suppliers and dealers now are expected to be held in the fall. There is not enough time for Roosevelt to start his marketing hearings before Congress adjourns. But during the recess, he expects to go to several cities to hear testimony on gasoline marketing problems.

•

Venezuelan officials are still hopeful of getting special consideration from the U. S. in the oil imports program. Embassy officials in Washington say they have been assured by ranking State Dept. officers that "something will be done" for Venezuela. Unofficially, however, there is a belief in Washington that no major changes in the imports program will be coming for some time. Venezuela wants a single country-of-origin oil allocation which would permit it to mete out individual allocations to companies operating there.

•

Labor is "blacklisting" some senators who voted against the amendment to cut depletion. The AFL-CIO Committee on Political Education is circulating the names of seven senators who, COPE says, voted "wrong" on four recent tax amendments. One of the votes was on the Douglas amendment to reduce oil and gas depletion. The senators named by the labor group were Willis Robertson (D., Va.), Strom Thurmond (D., S. C.), Carl Curtis (R., Neb.), Thomas Martin (R., Iowa), Karl Mundt (R., S. D.), Leverett Saltonstall (R., Mass.), and Andrew Schoeppel (R., Kan.). COPE also listed three senators who voted against most of the tax amendments —Democrats James Eastland (Miss.), Allen Ellender (La.), and John McClellan (La.). All ten of the senators voted to maintain depletion at the present 27.5% level.

All of these Senators will be up for reelection in 1960, and labor will be asked to oppose them. Although COPE, the official political arm of AFL-CIO, refrains from campaigning against a candidate itself, the blacklist is expected to be used by various member unions to determine which senators will be opposed in 1960.

•

The fight by oil jobbers to shift the collection level of federal gasoline taxes appears doomed this year. Ten bills are pending before the House Ways & Means Committee to change the tax collection from the supplier to the distributor level, but no hearings have been scheduled, and no action is expected.

•

A fight on higher gasoline taxes is still in the offing, even though some Democratic congressmen are willing to compromise with the Administration on some increase. The big opponents: user groups and the oil industry.

Market expansion takes many directions... From its earliest days, Ethyl has worked side by side with the Oil Industry in broadening the total market for service station products. When "Ethyl" gasoline was first introduced, our program worked toward actually creating a market. Later, we figured prominently in the development of the gasoline-burning tractor —which opened up still another market. Today, Ethyl is still working to expand the market for the Industry's best grade of gasoline—through promotions with individual oil companies. And our "Drive More" campaign—designed to increase sales of all service station products by promoting pleasure driving—is in its fifth year. In short, by taking many directions, Ethyl's market expansion program has been a continuous service to the Oil Industry.

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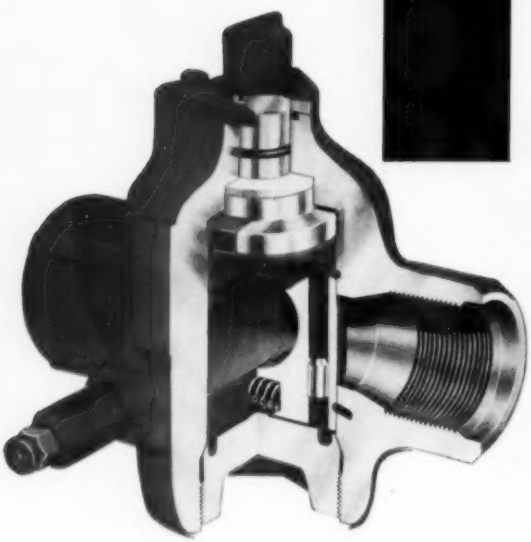

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Here's a valve that knows exactly what to do:
The higher the pressure, the more tightly the valve seals. And it's as simple as this—line pressure forces Mission Sealant through two semi-circular grooves around the downstream port, sealing like a plastic packing, to form a gas-tight seal. Leaks are stopped automatically *before* they can start.

Two split cylindrical cores, acting like a gate, are wedge-proof, allow easy opening and closing even under pressure. Only the downstream core is pressed against the body by line pressure. The upstream half is held lightly in place by springs. Core friction is thus cut in half.

The complete line of 315 Mission Valves brings these positive advantages of easy opening and tight sealing to practically all valve applications. This wide selection, the Mission Guarantee, and the Mission Renewal Policy combine to make Mission Valves your best and most economical buy.
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59-200

PLATFORM-AND-TENDER used by Gulf Oil Corp. for drilling in more than 200 ft. of water off Louisiana is one reason why . . .

This Deep-Water Test Is Different

With the current drilling of a "blue water" well 30 mi. off the Louisiana coast, Gulf Oil Corp. is demonstrating the feasibility of undertaking platform-and-tender operations in waters deeper than 200 ft.

This week, Salt Dome Production Co. was drilling toward a projected depth of 9,000 ft. for the Gulf No. 2-B South Timbalier Block 132, as Gulf endeavored to extend Block 131 field.

Subsurface conditions earlier had blocked further drilling on the first well, the No. 1-B, at about 3,900 ft.

The contractor is using the tender Pelican (built for Gulf by Bethlehem Steel's Shipbuilding Division in 1953) and a new type of platform structure designed by Gulf and built and placed by J. Ray McDermott & Co.

The venture is more than a significant offshore test. It means that a new dimension has been added to offshore drilling.

Prior to this operation, some offshore experts felt the platform-and-tender method would be impractical, if not impossible, in waters of such depth.

Some believed the platform would have to be so gigantic to withstand wave forces and drilling motion that its cost would be prohibitive.

Unofficially, however, it's understood that Gulf might be able to install as many as two or three such structures, under those conditions, for what many authorities had felt would be the cost of one.

Actual water depth at the location is 205 ft., an industry "first" for this type of operation.

Various methods have been used in waters considerably deeper than 100 ft., including mobile, submersible platforms; fixed platforms; and tenders-and-platforms.

Gulf itself drilled with a tender and conventional platform in 136 ft. of water not far from the present location.

Coring operations from floating platforms, and even actual well-drilling from such vessels, have been conducted successfully.

But the current test marks a new record for water depth with the platform-and-tender technique. It is the deepest water for any method, so far, off the Louisiana coast.

Gulf had to solve the tough problem of drilling in the bed of an ancient river, which had gouged a deep path and had left a very soft ocean bottom.

The ocean floor shelves off very sharply from both sides down to what was once the bed of this river.

There is a very thick layer of soft mud in the river bed.

Gulf had to design, build, and erect a platform that would reach down through 205 ft. of water, and beyond to firm footing under the mud. Yet it had to be stable enough to withstand wave action and the vibration and stresses of drilling operations.

The key to the solution was the erection of a special jacket with four sloping legs—a design that took some five years of experience and study.

The design was worked out by Wendell Nedderman, Gulf consultant and professor of civil engineering at Texas A&M college, and Gulf engineers, primarily those in the Morgan City (La.) office.

"This is the culmination of ideas and experience that took five years to evolve," says Nedderman.

"We came to the conclusion some time ago that the use of batter piling was the key to economical structures in deep water."

(Batter is slope from the vertical, expressed in terms of horizontal footage of slope per vertical foot of height.)

"As far back as 1953, we started

MAKE YOUR WELLS WORTH MORE

Let Dowell Engineer Your Frac Jobs With "Frac Guide"

Now operators are getting far better results and a much higher percentage of successful fracture treatments than they were only six months ago. These results include faster payout, lower lifting costs, higher production increases and better decline curves. Perhaps you can benefit, too. Ask your Dowell representative to use the "Frac Guide*" to design the most profitable treatment for your well.

What The "Frac Guide" Can Do For You

The Dowell engineer will want to take into consideration as many of these factors as possible:

- Depth, thickness, permeability and porosity of producing zone
- Viscosity, gravity and compressibility of reservoir fluid
- Reservoir pressure and bottom-hole temperature
- Previous treatment data — pressures, injection rates and materials.

Then, using the charts and formulas in his manual, he can predict — with reasonable accuracy — the effect of these variables:

- Volume of fluid; amount of sand
- Type of fracturing fluid
- Injection rate
- Addition agents
- Multi-stage treatments.

From these calculations he can engineer the most economical treatment — to help you get the results you want at the greatest net profit to you.

Since he can predict treatment results with greater accuracy, failures with consequent loss of production have been greatly reduced.

Since he can determine the fluid loss of various fracturing fluids, he can select the lowest cost fluid to give the desired fracture area.

Since he can predict the fracture volume with improved accuracy, he can more accurately calculate the amount of sand required to give a fully packed fracture. This reduces the healing of fractures and maintains large flow channels for profitable production, slower decline rates and maximum recovery.

Since he can predict injection rates and pressures, he can use high sand concentrations with less danger of unplanned sandouts. This helps keep down both fluid and pumping costs.

Just How Good Is The "Frac Guide"

Dowell engineers gave the "Frac Guide" a number of tests before releasing it for general use:

First, they used it to predict treatment results on hundreds of wells. Then, they compared these predicted results with known results of frac jobs already made on the wells. *They discovered that predictions made with the "Frac Guide" closely corresponded with what actually did happen.* More important, they also found many instances where they could have engineered a far more profitable treatment if the "Frac Guide" had been available.

Second, they started designing new treatments using the "Frac Guide." *The success ratio jumped from less than 60 to 97 per cent on the first 300 jobs.* Results were also far better than from previous treatments on similar wells.

Really engineered fracturing with the "Frac Guide" was pioneered by Dowell, so Dowell has the greatest backlog of experience in the industry. Call your nearest Dowell engineer for more information. Get him to *engineer* the treatment for your next well. There is no additional cost. Dowell has more than 165 offices and stations in the United States, Canada, Venezuela and Argentina. Dowell, Tulsa 1, Oklahoma.

*Dowell Trademark

Services for the oil industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

Here are examples of the type of results that are being

In the Texas and Oklahoma Panhandles —

—16 treatments were engineered with the "Frac Guide." These treatments produced production increases that averaged 63 per cent better than those obtained by previous treatments on similar wells. In many wells, treatment costs with the "Frac Guide" averaged 20 to 30 per cent less than costs on previous treatments. The improved production increases meant faster payouts and more profitable wells.

In the Denver Julesburg Basin —

—treatments engineered with the "Frac Guide" have been used in both the "D" and "J" sands. Generally, payout time on these jobs has been about half that of previous treatments because the desired amount of sand can be put away with less refined oil. For example, two treatments into the "J" sand were compared. Payout time for the job using the "Frac Guide" was only 100 days as compared to 186 days for the other job. In another study of two treatments, the cost of the job using the "Frac Guide" was about $2000 less, and payout time was more than 50 per cent less.

In Northern Oklahoma —

—40 wells treated with the "Frac Guide" were compared with other fractured wells. The jobs using the "Frac Guide" cost about 15 per cent more but allowed the use of 50 per cent more sand. Initial potentials of the wells treated with the "Frac Guide" were higher, and decline curves are expected to be flatter.

In Southern Oklahoma —

—the "Frac Guide" has permitted the use of water-base fluids instead of more expensive fracturing fluids. Many wells have been treated with four-cent-per-gallon fluids instead of the 10-cent-per-gallon fluids previously used. Many excellent producers have resulted.

In Lea County, New Mexico —

—Lea County wells treated with and without the "Frac Guide" were compared. The wells for which treatments were engineered with the "Frac Guide" averaged 295 bopd flowing, while other fractured wells averaged less than 70 bopd pumping.

Early dawn in the Four Corners area finds operators and Dowell ready to go. Dowell fracturing treatments in formations like the Gallup have been particularly successful.

obtained with the help of "Frac Guide" developed by Dowell

In Crane County, West Texas –

—wells completed in the San Andres have shown much slower decline rates after treatments with the "Frac Guide," even though there were no significant increases in potential.

In Ector County, West Texas –

—a comparison of wells in the Edwards pool was made. Treatments engineered with the "Frac Guide" gave production increases about 40 per cent greater than other treatments in the same field.

In the East Texas-Northern Louisiana area –

—comparisons were made on a control group of eight wells—four wells were treated with the "Frac Guide," and four without. All wells were completed into the Mooringsport formation and were generally similar. Treatment costs for the wells fractured without the "Frac Guide" averaged $4440; and average production test figures rose from 6.5 to 55.5 bopd. When the "Frac Guide" was used, treatment costs dropped to an average of $2904. Average production test figures rose from 8 to 121 bopd. In this case, an average of $1536 was saved per treatment, and results were greatly improved.

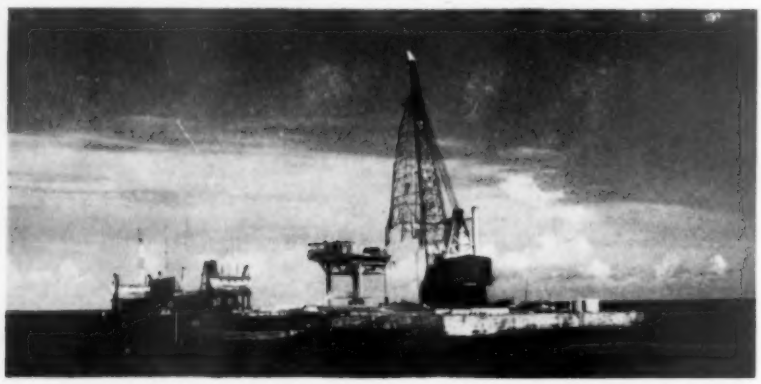
In Uintah County, Utah –

—a well was producing 10 bopd and failed to respond to a fracturing treatment. Another similar well was treated with the aid of the "Frac Guide." This well was also producing 10 bopd before treatment. After fracturing, production shot up to 220 bopd; and the well was still producing 185 bopd—steady—60 days later.

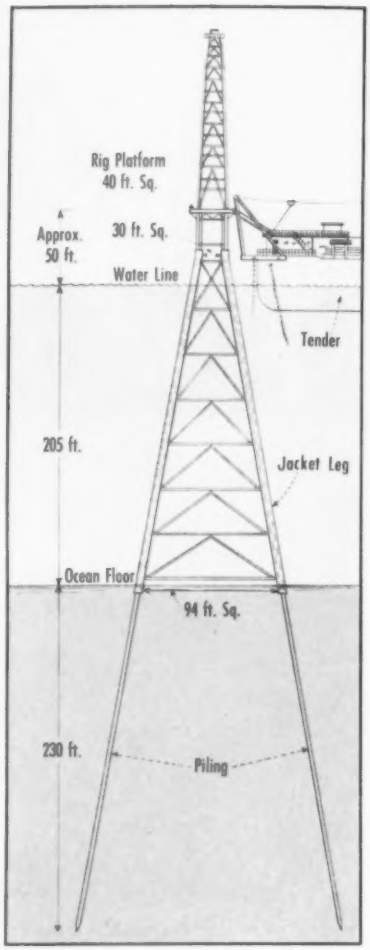
In Converse County, Wyoming –

—two treatments made with the "Frac Guide" were compared with other frac jobs made on the same lease. Previously, rapid production declines to 12 or 15 bopd had made frequent re-treatments necessary. All wells in the field had been pumping. Though the jobs with "Frac Guide" cost about twice as much, production stabilized at about 56 bopd *flowing*, lifting costs were reduced and payout was faster.

JACKET is cradled between two heavy-duty cranes on J. Ray McDermott derrick barges prior to being lifted upright so that lower end can sink to ocean floor.



MODIFIED DERRICK is lifted into place on the platform. The 140-ft. derrick was cut to 109 ft. and rigged with crown block to be ready for operation when placed.



SKETCH shows details of platform construction. Note 1:12 slope of legs.

putting a small amount of batter in structural piling—something on the order of 1-to-12," Nedderman explains.

"There was a curious reluctance among construction firms to use batter piling. They seemed set on the vertical pattern.

"But using the vertical pattern for a platform in such depths would have resulted in a narrow, slender structure. Without 'battering,' we would have had a 100-ft. platform at the top if we had needed 100 ft. at the bottom.

"By building the structure on a 1-to-5 batter, however, we achieved a broad, stable base and needed fewer legs.

"Structurally, a tremendous advantage is offered by batter piling in resisting lateral wave forces, as well.

"It cuts down on bending stresses at the mud line—among other things—and that is a very critical problem offshore.

"It is one of the controlling factors in going out into the deeper water."

The jacket of the structure is a bit over 90 ft. square at the base. But it narrows to only 30 ft. square at the top. This leaves space for only a small drilling platform.

At its base, where its four legs push some 8 ft. into the ocean-floor mud, the jacket is 94 ft., 2½-in. square.

Mounted on the top of the jacket is the platform section, which has an overhang of 10 ft., providing a 40-ft.-square space.

The legs joining the platform deck section to the platform itself are vertical.

The derrick and engine rest on a grid of beams on top of the platform deck. Unless weather conditions require it, there is no need to fasten the substructure to the deck. Weight and friction factors are adequate to hold them together.

In changing well locations, the substructure is skidded along the platform deck beams.

The relatively small size of the platform reduces the amount of drilling equipment on it to a bare minimum.

Most of the equipment ordinarily on the drilling platform—mud pumps, shale shaker, de-gasser, logging unit, etc.—are mounted, instead, on a superstructure at the forward end of the tender.

On the drilling floor itself, there is little besides the drawworks, derrick, and engines.

The Lee C. Moore derrick, originally some 140 ft. high with a load capacity of around 500,000 lb., first was cut down to 91 ft.

Then an 18-ft modified top section was added—giving the derrick a height of 109 ft. and a load capacity of about 300,000 lb.

The derrick was modified so that it could be lifted to the platform already completely rigged with the crown block on the lines strung, and so on.

"We just set it on the base, bolted

When oil rigs probe the ocean floor ...why are Gardner-Denver pumps on board?

Long life

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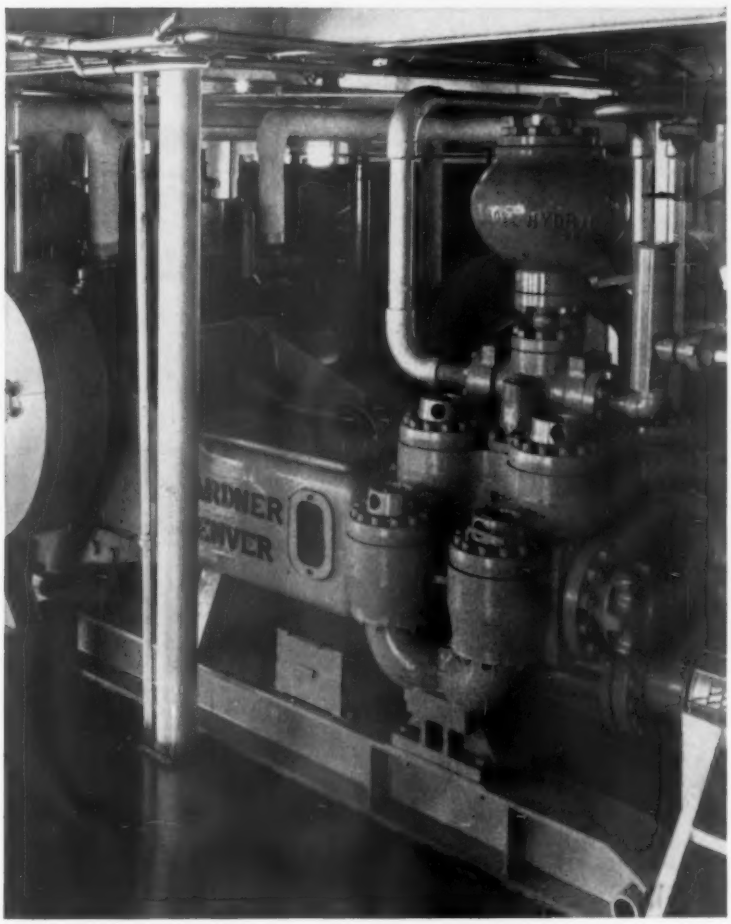

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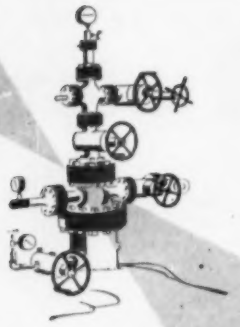

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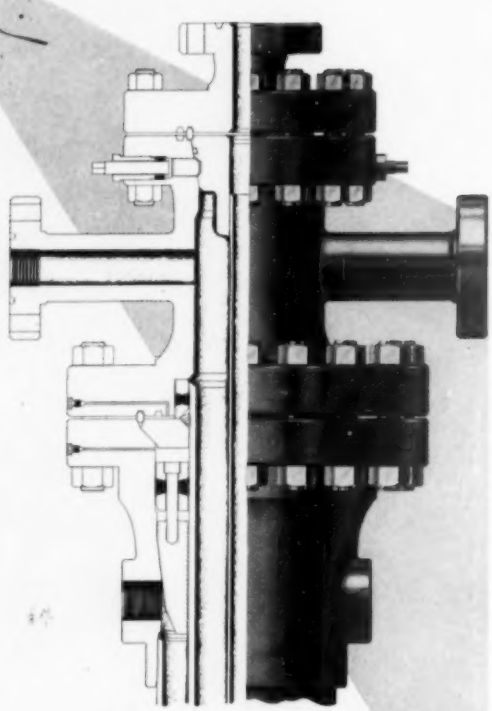

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it down, and went to work," says Claude Gray, Salt Dome toolpusher.

Salt Dome is using 10,000 ft. of 4½-in. drill pipe.

In addition to modifying the derrick, Salt Dome installed a new National Ideal 55 drawworks and two GMC 6-110 twin diesel engines.

Salt Dome says its total equipment investment, including the modification and the new equipment, came to about $300,000.

The jacket, containing the initial lengths of piling, was transported to the location as a unit and simply lowered into place by two derrick barges.

Before the trip out, 30-in. piling was inserted the full length of each of the 225-ft., 6-in. jacket legs (the legs are 33-in. in diameter), and the jacket legs were sealed.

Each of these initial lengths of piling alone weighed 58,000 lb.

On location, two McDermott derrick barges lifted the jacket between them and lowered it into place. The seals were then knocked out of the jacket legs, and driving of the piling begun.

The piling was driven 230 ft. into the ocean floor—making each length of piling more than 445 ft. long.

The piling runs the full length of each 225½-ft. jacket leg in addition to the 230 ft. into the ocean floor.

Three different welding operations were involved.

As the piling was driven, additional lengths were full-butt-welded on to make the piling continuous through each jacket leg.

When the desired penetration had been reached, each length of piling was welded securely to the top of the jacket leg, with shims employed, and was then cut off a uniform 1½ ft. above the top of the jacket leg.

Each vertical leg of the deck platform, 30 in. in diameter, had been fitted with a "stabbing sleever." These sleeves helped in lining up platform deck legs with the piling for welding.

By designing everything as unitized "packages," Gulf was able to reduce the entire erection operation to just derrick barge lifts.

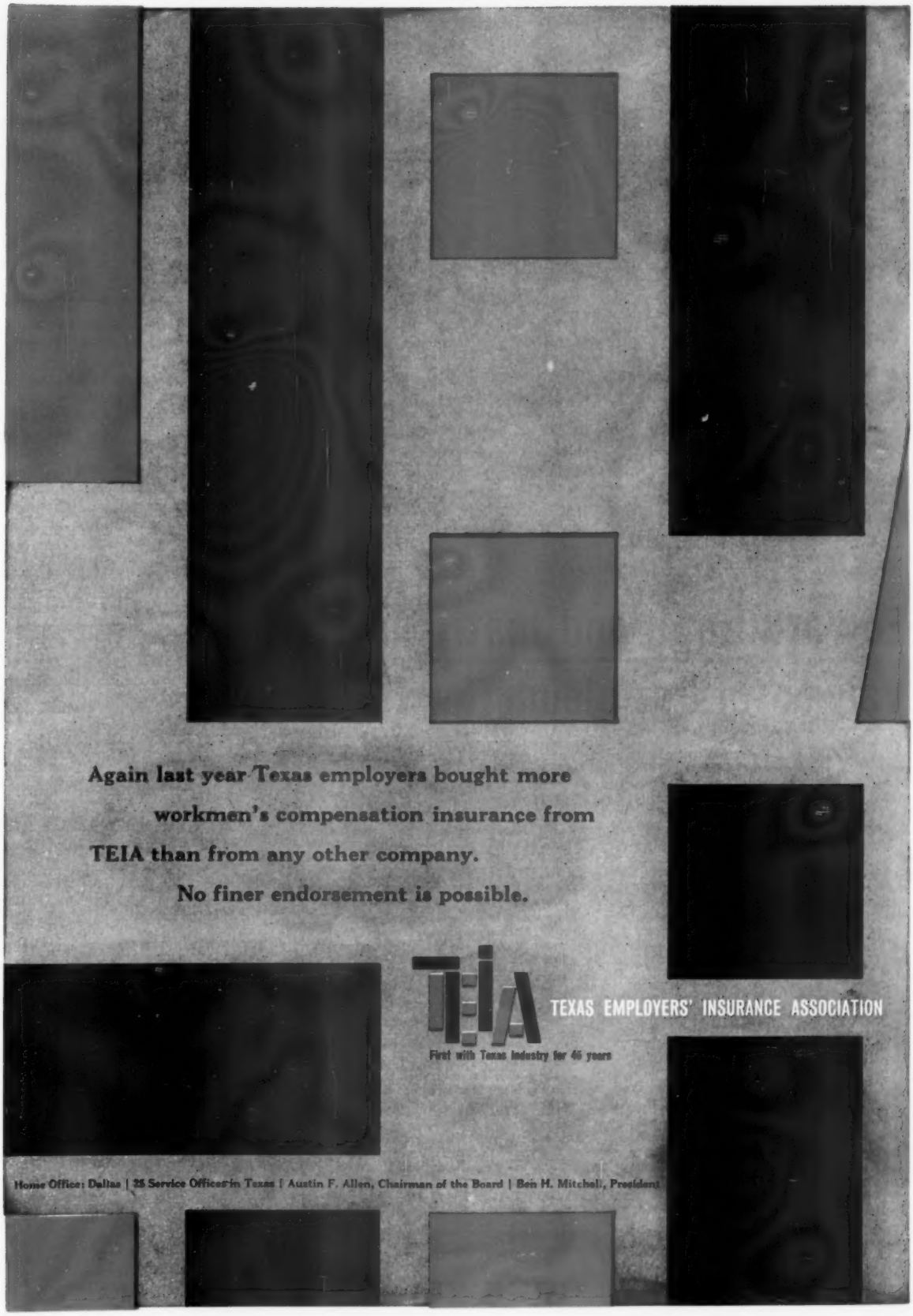
The jacket was transported and set into place as one unit.

The platform deck section constituted the second.

The derrick and engine substructure—with all drilling equipment except the derrick permanently mounted—was the third lift.

And the derrick itself was the fourth "package" lifted to the structure.

Anchoring the tender proved to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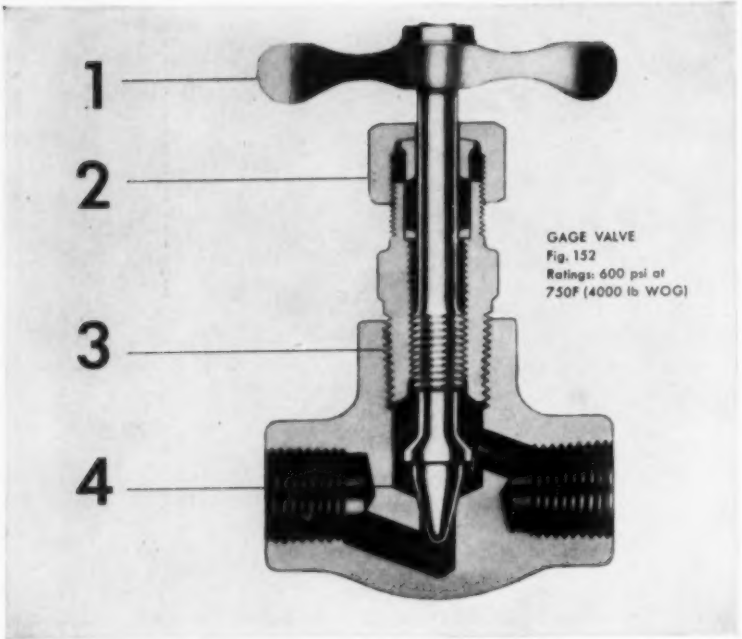

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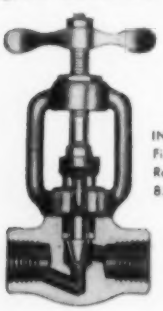

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Fig. 952
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LOCATION of Gulf's deep-water test is in Block 132, south of Block 131 field.

be a simple problem. Gulf merely used giant concrete blocks.

Eight blocks, each 15 x 15 x 4 ft., weighing about 65 tons, hold the Pelican in place.

Each of these "anchors" is resting on the ocean bottom, some 1,500 to 1,800 ft. from the tender. They will be left there when drilling is completed.

Designers believe this type of platform probably would work in water 250 ft. deep, but that additional study would be required before venturing into the 300-ft. to 400-ft. depth bracket.

Nedderman believes there are "three essential characteristics to good design for deeper water:"

(1) The use of heavy batter and heavy piling.

(2) A minimum of resistance to wave forces in the zone of the wave crest (waterline to deck).

(3) Adequate deck clearance elevation—above maximum storm wave crest.

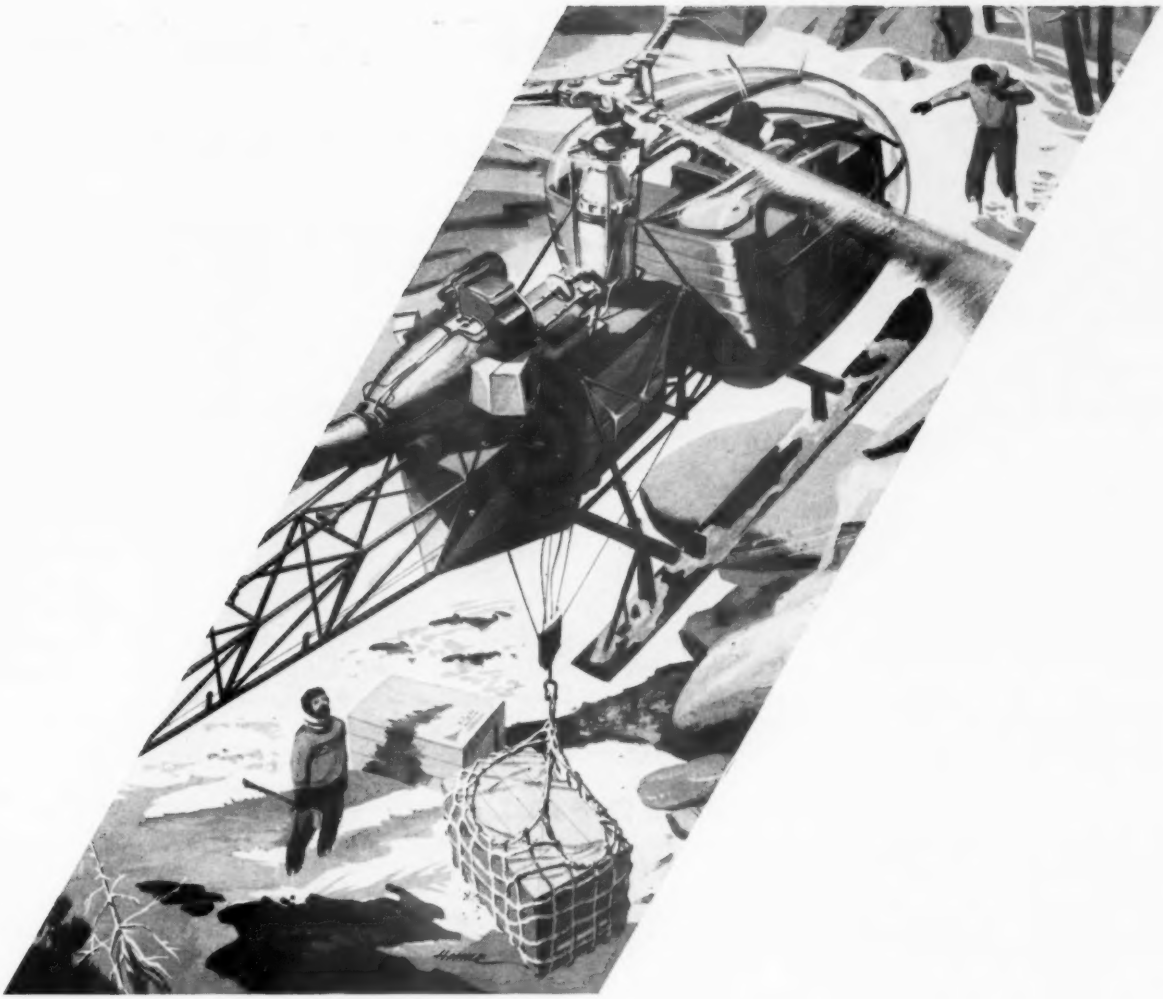
And, he points out, "a structure should be both functionally and structurally adequate."

Some modifications already have suggested themselves for future structures of this nature.

For one, any such future structure probably would have a continuous guide for the conductor pipe at the top level, instead of a stab guide.

And there probably will be guides at each level of the structure. There are four guides in the present seven-level structure.

The deck-space limitation permits the drilling of only two holes from the present platform. But Nedderman thinks that future models could be built to permit the drilling of four wells merely by changing the design of the platform deck, the derrick, and the engine substructure, without materially increasing the over-all size of the drilling floor.



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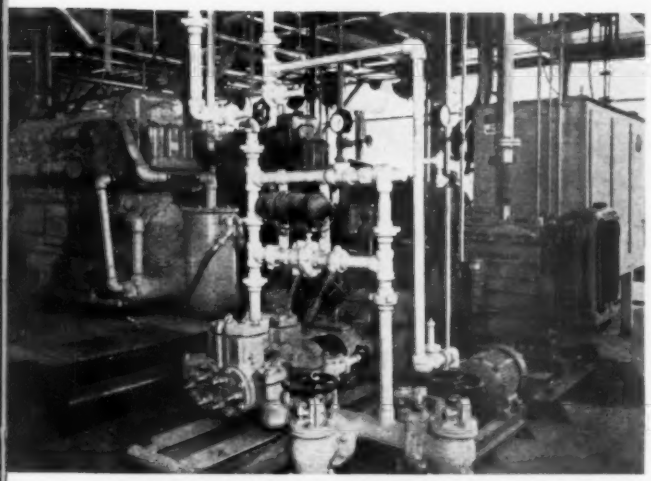
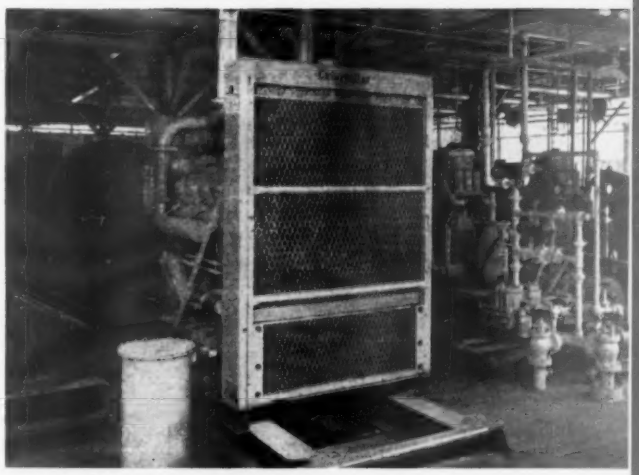
CONTINENTAL-EMSCO COMPANY, Dallas, uses 18 Cat Engines for auxiliary and prime power on the two Lake Maracaibo Drilling Tenders shown here. The tenders are 180′ long with 70′ beam and 11′ 3″ draft. Each is equipped with a helicopter deck, 45′ x 83′.

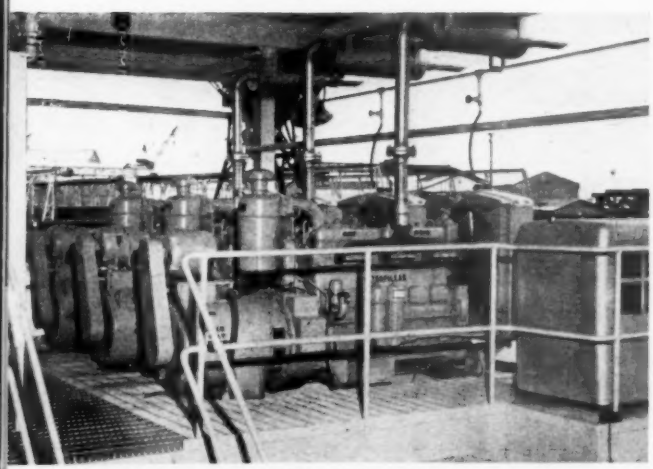
buy "in-stock" oilfield equipment to have top quality throughout



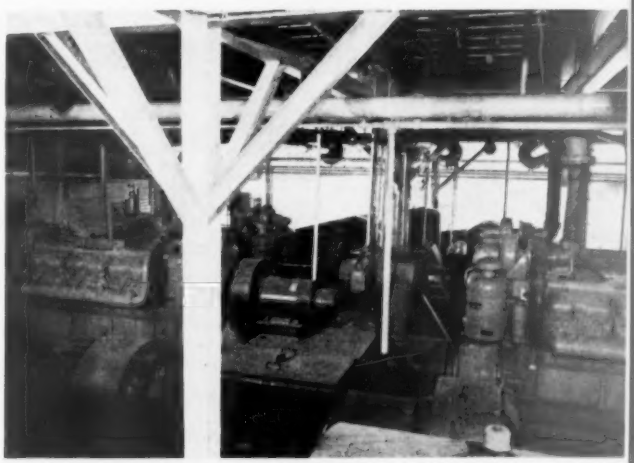
A MODERN, HEAVY-DUTY CAT D311 ENGINE (right) drives a Gardner-Denver FG-FXG 5" x 6" pump on each tender. These Cat-powered duplex pumps supply raw water for washing down rigs and keeping tenders clean. The D311 is rated at 65 HP. Other Caterpillar Engines range up to 650 HP (maximum output capacity).



HERE A CATERPILLAR DIESEL D375 ENGINE supplies power for a Gardner-Denver mud pump on each tender. Continental-Emsco Company finds the D375 an excellent power-match for the 7¼" x 14" Model FK-FXK pump. Every Caterpillar Engine and Electric Set is built to meet heavy-duty demands.



THREE CAT D318 DIESEL ELECTRIC SETS provide all A.C. electric power for each tender. Uses include excitation for the D.C. rig drive equipment, the generator and motor blowers, mud mixers, water and fuel pumps, and lighting for rig and living quarters.

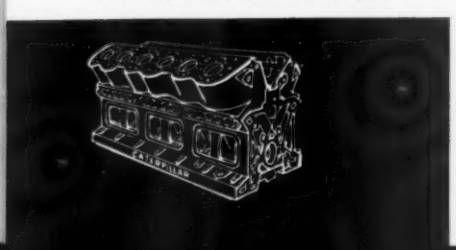


FOUR TURBOCHARGED CAT D397 DIESEL ENGINES drive Continental-Emsco "Del Lago" type compounding transmissions on each tender. The rigs, intended for service on Lake Maracaibo, Venezuela, have a drilling depth of 12,000 to 15,000'.

Caterpillar's own foundry casts engine blocks of a special high-tensile strength alloy, 50% stronger than ordinary gray iron castings. Numerous ribs and partitions provide further strength.

LOW FUEL COST. Caterpillar Engines don't require expensive diesel fuels, work fine without clogging even with No. 2 furnace oil. They burn fuel more completely, to save you money.

Honest horsepower. Your engine comes with a notarized certificate of power backed by Caterpillar Tractor Co. You get what you're promised.



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Don't Undersell the Arctic Islands

- **Canada's Arctic Islands have all the geological earmarks of a prospective petroleum province.**
- **But transporting any oil or gas that may be found is another matter. One possibility: nuclear-powered submarine tankers.**

The newest chapter of petroleum exploration is now being written in the Arctic Islands—the largest unexplored basin of sedimentary rocks on the North American continent.

This vast area—exceeding a half-million sq. mi. of land north of the 61st parallel—is now being explored for the first time by nongovernmental groups.

Two oil companies—Dominion Explorers, Ltd., and Round Valley Oil Co., a subsidiary of Lobitos Oilfields, Ltd.—already have geological parties working in the area (PW—Jul.3'59, p20).

Other companies have filed applications on huge tracts in the islands, and are ready to join the hunt as soon as new leasing regulations are approved by the Cabinet, probably before the month is out.

Up to now, the only systematic exploration carried out in the frozen wastes has been by the Geological Survey of Canada. Large parts of the Arctic Archipelago have been explored and mapped by GSC parties over the past dozen years.

Reports by geologists and others stress the petroleum possibilities of the area.

William H. Patterson, president of Trans-Western Oils, Ltd., sums up a comprehensive report on the area this way:

"Data indicate that the sedimentary basin of Canada's Arctic Islands has strategic, political, market, and economic advantages, and that the area now is on the threshold of great exploration for oil and gas."

Y. O. Fortier, of GSC, says, "Rocks of almost every age, from Precambrian to Cenozoic, occur in the area . . . The petroliferous nature of some formations, the varied lithologies and structures, the wide distribution in time and space, and the substantial volume of fossiliferous strata are reasons for considering the Arctic Archipelago as a potential source of oil and gas."

Another GSC report says, "Geological conditions make it reasonable to expect that valuable accumulations of petroleum and natural gas may be found."

The Canadian Petroleum Assn., in a submission last winter to the Royal (Borden) Commission on Canada's Energy Resources, wrote:

"There are several basins in Canada that have possible oil and gas reserves. Other than the great sedimentary basins of western Canada, the largest of these, in which the potential production may be of considerable magnitude, is in the Arctic Islands.

"Here a favorable sedimentary sequence and the presence of several salt domes similar in structure to those of the Gulf Coast of the U. S. are known."

Dominion's president, J. D. Bateman, says the eastern part of Bathurst Island offers "a multiplicity of structures," and that certain areas of the Ringnes Islands, in the Sverdrup Basin, are known to contain domes similar to the salt domes found on the Gulf Coast of the U. S.

The land surface of the Arctic Islands includes mountains, uplands, plateaus, lowlands, and plains.

In general, the land surface is high in the east, where mountain systems reach over 10,000 ft. in elevation. From there, the land slopes down through uplands and plateaus to lowlands and plains in the central part of the region.

The low areas, however, are not continuous, but occur as basins surrounded by higher ground, or are interrupted by tongues, or belts, of uplands, according to Fortier.

The land rises again in the west, where plateaus reach 3,600 ft. in elevation, and finally drops off to a low coastal plain along the western limit of the region.

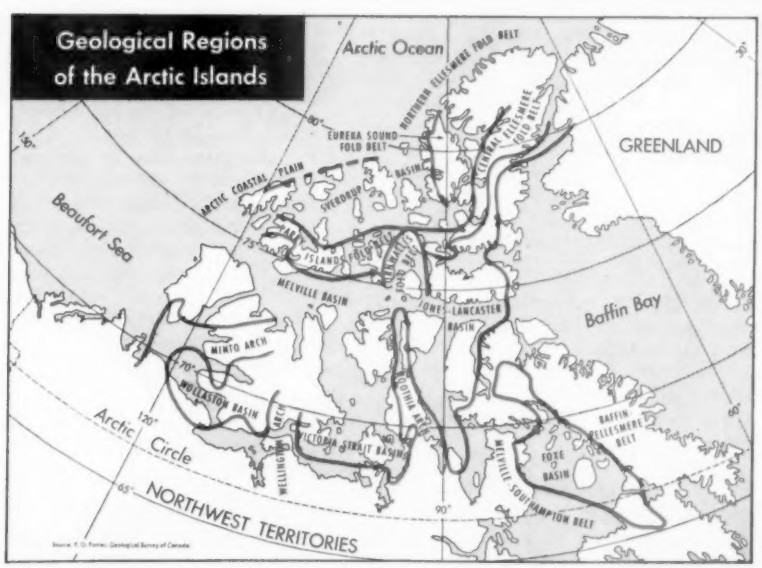
Ice caps, snowfields, and glaciers are common in the east, and a few small ice caps are found in the west.

According to Fortier, the mountains and uplands are either on resistant Precambrian rocks, or on folded formations of various ages, where ridges and valleys, or escarpments, reflect the bedrock structure; the plateaus are on unfolded strata mainly of Paleozoic limestone; and the lowlands and plains cover areas of flat-lying Paleozoic, Mesozoic, and Cenozoic strata.

The exposed formations, in general, are successively younger from southeast to northwest.

The Arctic Islands can be divided geologically into three areas: (1) a stable area; (2) a relatively mobile area; and (3) the coastal plain.

The stable area has undergone no major deformation since the beginning of the Paleozoic era, says Fortier. It underlies the southeast, comprising the major part of the Archipelago. It is underlain in part by Precambrian rocks in extension of the Canadian Shield of the mainland, and in part



by Paleozoic strata, mainly flat-lying to gently-inclined. The latter mantle the Precambrian basement and form the Arctic lowlands and plateau.

The Arctic lowlands and plateau separate the shield from the unstable Innuitian region.

This region includes rocks of all eras, mainly Paleozoic and Mesozoic, and covers a large part of the Queen Elizabeth Islands.

The shield area includes the Baffin-Ellesmere and Melville-Southampton belts; and the Boothia, Wellington, and Minto Arches.

The Arctic lowlands and plateau include Foxe, Victoria Strait, Wollaston, Jones-Lancaster, and Melville Basins.

The Innuitian Region includes the Cornwallis, Parry Islands, Central and Northern Ellesmere, and Eureka Sound fold belts.

Exploration is but the first of many problems oil companies will face in the Arctic Islands. Another, probably bigger problem: What will they do with any production that may be found?

One official of a company holding acreage in the area says:

"This [the over-all Arctic Islands' situation] is a great enterprise and has a large element of risk. It will be long-term."

As for markets, he adds: "It's putting the cart before the horse. First we find oil, then the markets, and then we get it to market."

Surface tankers could find several suitable harbors in most of the islands.

Trans-Western's Patterson says most of these harbors could be reached through ice-free channels in the summer, from two to five months in duration depending on area and severity of the weather.

In some years, navigation is open all winter through Barrow Strait and Lancaster Sound to Baffin Bay.

Among the shipping companies offering service to the area is one which advises: "We have had ships freighting in the Arctic the last dozen years for the U. S. Navy and for Canada's Mines & Technical Surveys Branch. One of these is equipped with a large helicopter pad."

Pipelines undoubtedly will be necessary to move petroleum to the ports. But no particular difficulty is expected on that score.

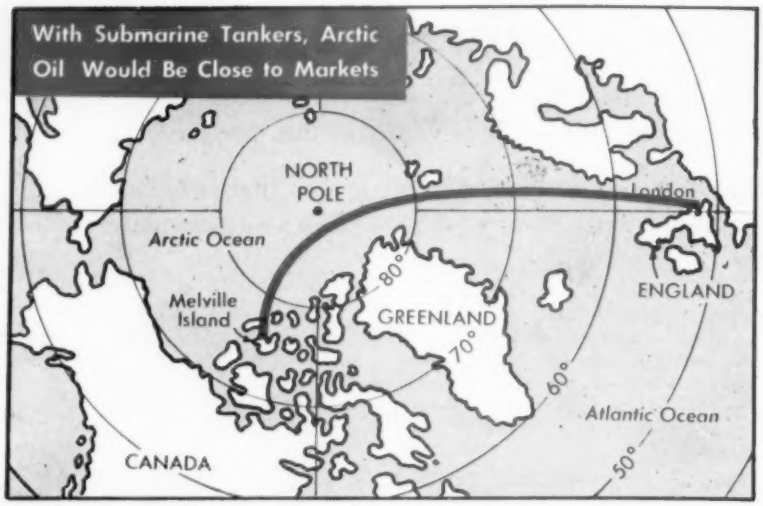
By all the odds, the most interesting possibility is the use of submarine tankers.

Alex Hemstock, research engineer for Imperial Oil Ltd., said recently: "Science's greatest contribution to the [Arctic] transportation problem will be in the field of undersea craft.

"The vessels will mean that the whole Arctic will have access to the shipping lanes of the world."

Another source says that a sub tanker will require only 40% of the horsepower required for a comparable-size surface tanker.

And sub tankers would be able to transport oil to Europe and America throughout the year, traveling easily beneath the polar ice.



DISTANCES ARE CUT by movement of atomic submarine tankers under the polar ice cap, giving Arctic oil a potential edge in transport costs to some world markets.

Use of sub tankers would greatly reduce distances to markets.

The estimated distance from Melville Island in the Arctic to Southampton, via the North Pole, is 3,300 mi. (map). This compares with 7,500 mi. from the Persian Gulf to Southampton via the Suez Canal. Thus, a sub tanker getting the same tariff per 100 mi. would have a cushion of 39.6¢ per bbl. in carrying Arctic oil to the United Kingdom as against Persian Gulf oil.

And, says Patterson, "there is no physical reason, apparently, why such submarine tankers could not deliver oil deep into the heart of the North American continent via the St. Lawrence Seaway."

The key to economic sub tanker transport of oil from the Arctic region lies in nuclear power.

The recent trips by the U.S. atom subs Nautilus and Skate proved that voyages beneath the polar ice cap are practicable.

The U.S. Maritime Administration, which is conducting research on commercial atom sub tankers, has said:

"Nuclear power is a magic word insofar as submarine proponents are concerned. It is what they have been waiting for, and it is the key which, for the first time, opens the door to the possibility of the long-range commercial submarine" (PW—Oct.10'59, p36).

The agency feels that the optimum size for an atom sub tanker would be a 40,000-ton vessel with a 40-knot speed.

The Japanese are reported studying an atom sub tanker of 100,000-ton design. Great Britain and Sweden also are conducting such research.

Shipment of natural gas would pose greater difficulties.

Patterson says that the recent shipment of Louisiana natural gas in liquid form to England via the experimental tanker, "Methane Pioneer" (PW—Feb.13'59,p38), is a likely harbinger of things to come, if needed, in the far north.

Land-vehicle transport would be feasible on most of the islands.

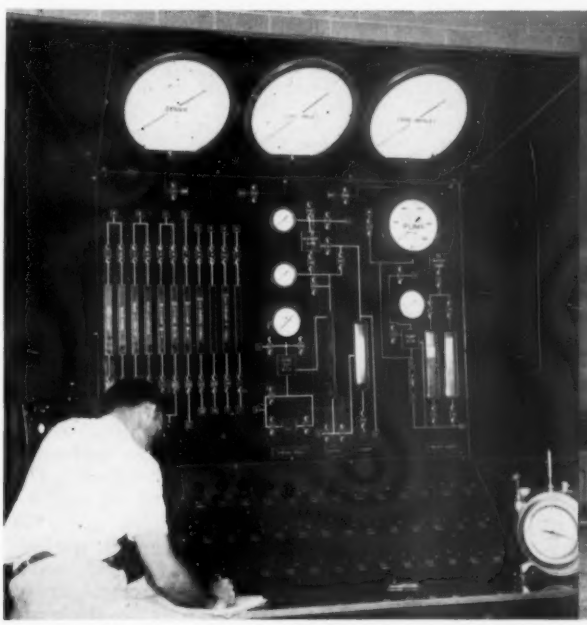
Many of the islands are not mountainous; they comprise, for the most part, level benches and plateaus.

While summer mud might be severe in some areas, Patterson says that, since rock outcrops "everywhere," roadbuilding should not be difficult.

The absence of muskeg also minimizes transport hazards.

The remoteness of the area, however, will make necessary longer-range planning for supplies and equipment—perhaps as much as two years in advance. But, as one oil man puts it: "It's still largely a question mark. It'll take some time before we really get to know what the problems are, and how to tackle them."

THE ATLANTIC REFINING COMPANY ANNOUNCES THE APPOINTMENT OF JAMES A. LEWIS ENGINEERING, INC. PETROLEUM RESERVOIR ANALYSTS AS LICENSING AGENT FOR THE PATENTED HIGH-PRESSURE GAS PROCESS (A MISCIBLE DISPLACEMENT PROCESS)



CONTROL PANEL of the Atlantic Miscible Displacement high-pressure pilot plant at the Dallas Research and Development Laboratory. Panel has measuring and recording controls.

HIGH PRESSURE creates the miscible effect at Atlantic's project in the Block 31 Devonian field of Crane County, West Texas. The plant has compressors of 9500 HP and injects about 45,000,000 cu. ft. of gas daily.

With the appointment of James A. Lewis Engineering, Inc., as licensing agent, Atlantic offers to the industry a thoroughly tested and proved process for recovering the most crude possible from deep oil reservoirs. The large amount of laboratory and field data on the process — representing more than a decade of experience — now is available through the Lewis firm.

Basically, this high-pressure technique, pioneered by Atlantic, consists of sweeping the reservoir with gas that is miscible with crude oil. Greatly increased reserves effected by this process are recovered at high rates of production. Atlantic has succeeded in maintaining the daily output of one project for six and one-half years at 15,000 bbl., which is equivalent to 280 bbl. per day per producing well.

For full information on how Atlantic's patented miscible displacement process can be applied to your own operations, call RIverside 1-1877, Dallas, Texas; or write:
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New Choke Aids Problem Wells

A new type of downhole "storm choke" is being tried out in Gulf Coast problem wells, particularly on those located offshore.

The device is designed to shut in oil or gas wells automatically, preventing blowouts, if surface controls fail or are damaged.

Manufactured by Camco, Inc., of Houston, the new tubing safety valve can be installed or removed by wireline.

Camco says the safety valves are being installed at the rate of "about 20 a month," with the bulk of them going in offshore "problem wells," where chokes have been sanding up and closing prematurely.

The tool has been in production for about three months.

The valve is adjusted to close at a predetermined pressure drop.

It consists of a spring-loaded flow tube with a choke attached to the lower end.

The pressure differentials required to close the valve for a given choke size are adjusted by compressing the coil spring with spacer rings.

The coil spring holds the flow tube in the down position, preventing a flapper valve from seating on the choke.

With normal production, the well flows through a fully-open, unrestricted choke.

The valve does not throttle as the differential across the valve approaches the set closing differential. The flapper valve is held off its seat and out of the line of flow until the present closing differential is reached.

If surface controls fail, however, and the pressure differential across the valve exceeds the pre-set closing differential, the flow tube moves up sufficiently to free the flapper valve.

The flapper valve then snaps out to seat on the flow choke, and stops all flow through the tubing.

The valve's design minimizes premature closing due to pressure surges or temporary plugging.

Since viscous fluid in a "snubber chamber" at the top of the tool must bypass the close-fitting piston as the valve closes, the flow tube moves up slowly against a hydraulic braking action—until the pressure is sufficient to overcome the predetermined spring load.

This slow movement lessens the chances for a premature closing of the valve.

• Cuts cleanly with minimum flare.
• No damage to surrounding casing.
• Operates at pressures up to 10,000 psi.
• Operates at temperature of 300 degrees F.

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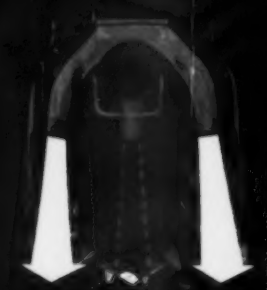

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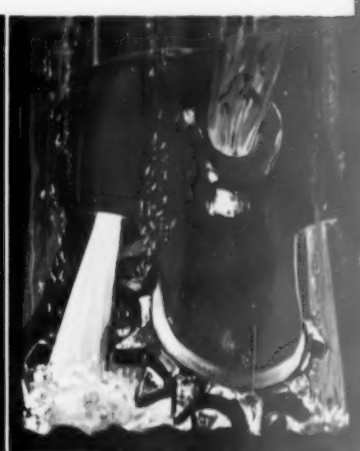

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SUN OIL COMPANY

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IN CANADA: SUN OIL COMPANY LIMITED, Toronto and Montreal

What's New / IN EXPLORATION, DRILLING, PRODUCTION

Bonus bids in last week's University of Texas sale of oil and gas leases on 36,000 acres were the lowest in recent years.

A total of $1,989,500 was offered, at an average of $55 per acre. This compares with $116 per acre paid in the September, 1958, sale.

Tennessee Gas Transmission Co. led the bidding with an offer of $225,000 for a 1,920-acre tract in Crockett County's Devonian gas producing area. Humble Oil & Refining Co. bid $60,000 for a 2,560-acre block in Andrews and Gaines Counties.

•

Shell Oil Co. has begun waterflooding two reservoirs in Rural Hill field, Hamilton County, Ill.

Shell was named operator of the 1,954-acre Rural Hill Waterflood Unit last September, after negotiations among ten oil companies and about 400 royalty owners. Since that time, 31 new wells have been drilled to develop the flood, which will involve injection of 25,000 b/d of water into 81 input wells. There are 76 producing wells in the unit.

The water is being injected into the depleted Aux Vases sand and Ste. Genevieve limestone.

•

Commonwealth Petroleum, Ltd., Canadian holding company, has acquired an interest in the 20 drilling rigs owned by General Petroleums Drilling Co., Ltd., of Calgary.

Though no figures have been given, it is believed the interest acquired is major. Commonwealth's subsidiary, Commonwealth Drilling Co., Ltd., is Canada's largest oilfield drilling firm.

Cody R. Spencer, GP president, says no change in administration or operations is planned. He adds, however, that Commonwealth and GP are examining areas where their over-all facilities could be best used.

•

Stekoll Petroleum Corp. has increased its reserves by acquiring oil and gas producing properties in Ochiltree and Hansford Counties, Texas Panhandle.

The purchase was made from Horizon Oil & Gas Co., Dallas, for an undisclosed amount. The properties include 11 oil wells, 3 gas wells, and more than 20 proven locations.

Current daily production is 600 b/d of oil and 2-million cf/d of gas.

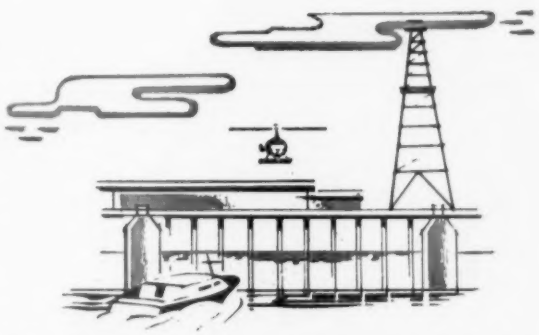
•

Plans for unitizing and flooding 1,151 acres in KMA field, Wichita County, North Texas, have been outlined to the Texas Railroad Commission.

Evidence submitted by W. A. Moncrief & Sons indicates that there are some 30,000 acres in the entire reservoir. Two intervals would be flooded under the program.

A total of 55 wells have been drilled

LOSS PREVENTION



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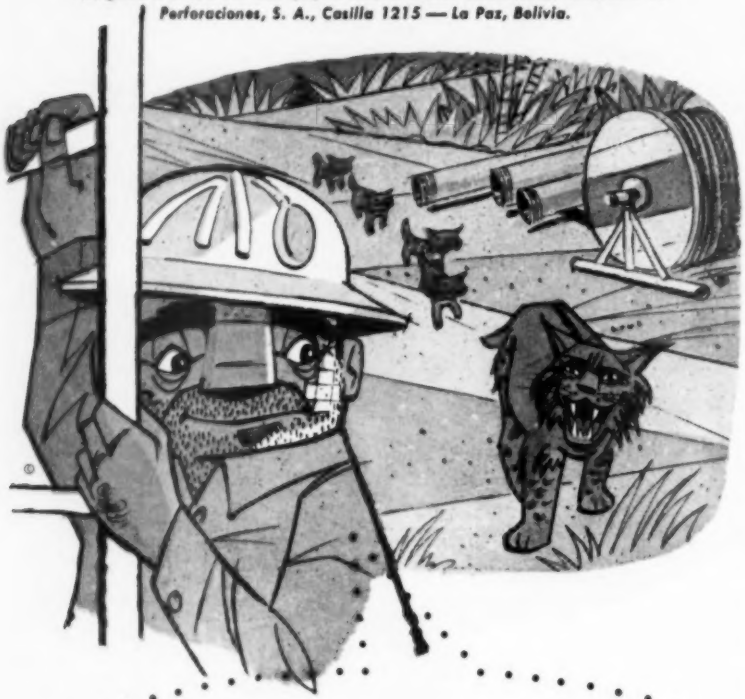

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on the leases involved, of which 40 are still producing. Cumulative production to date on these leases is 3,855,000 bbl. It's estimated that flooding would result in recovery of an additional 2.9-million bbl.

•

Associated Oil & Gas Co. has agreed to buy all capital stock of two Texas companies—Timberland Exploration Co., Houston, and South-Tex Corp., Alice.

Timberland owns an interest in 12,278 acres in six Southeast Texas counties, including 17 Wilcox and Frio oil and gas wells. The company also has one medium and two large drilling rigs.

South-Tex owns and operates a gas processing and recycling plant in Nueces County with a capacity of 75-million cf/d of gas, and a 75-mi. gathering system.

Timberland will be acquired in exchange for 107,317 shares of Associated stock, and South-Tex for 162,500 shares. The latter transaction is subject to a tax ruling from the Internal Revenue Service.

•

The cost of doing oil business in the state of Louisiana nudged upward last week when a new fee system for permits went into effect.

The new fees apply to drilling permits, drilling permit renewals and amendments, public hearings, dual or multiple completions, permits to commingle production automatic custody transfer permits, and changes of operator, well name, or ownership.

The new schedule doubles the cost for drilling permits—from $50 to $100. Previously, the only fees levied were for drilling permits and drilling permit renewals. The latter have been increased from $5 to $25.

•

Sale of oil and gas leases on 555 acres in Rangely field and on Williams Park anticline in Colorado brought bonus offers of $15,727 last week.

Chatham Oil Co. offered $8,000 bonus for a 40-acre tract in Rangely to top the bidding in the Bureau of Land Management sale.

•

Two new geophysical publications and a new statistical study are now available to oil men.

The Mississippi Geological Society has issued a book on "Mesozoic-Pale-

ozoic Producing Areas of Mississippi and Alabama." The book contains structure maps of 57 fields, and other geological material. It sells for $12.50, and can be ordered from the society at Box 2253, Jackson, Miss.

The State Geological Survey of Kansas has published "Symposium on Geophysics in Kansas," obtainable for $2.00. The book contains 25 papers dealing with the Kansas crust, and with geophysical studies in the state.

The activities of the Conservation Committee and statistical data pertaining to crude production in California are covered in the 1958 issue of "Annual Review of California Crude Oil Production."

•

Texas American Oil Corp. has acquired 4,057 acres of oil and gas leases in the active Albion-Scipio trend area of Michigan.

The acreage is in five separate spreads, all in Calhoun County.

•

Atlantic Refining Co. is making available to the industry its miscible-displacement process for increasing oil recovery.

James A. Lewis Engineering, Inc., Dallas consulting firm, has been named agent to license the process.

Atlantic says its action opens the door to a large amount of laboratory and field data accumulated in more than a decade of developing the high-pressure gas process. Atlantic's Dallas laboratories have been the focal point in the development.

The company says the process has been applied successfully in University Block 31 field, Crane County, West Texas, and in Neale field, Beauregard Parish, La.

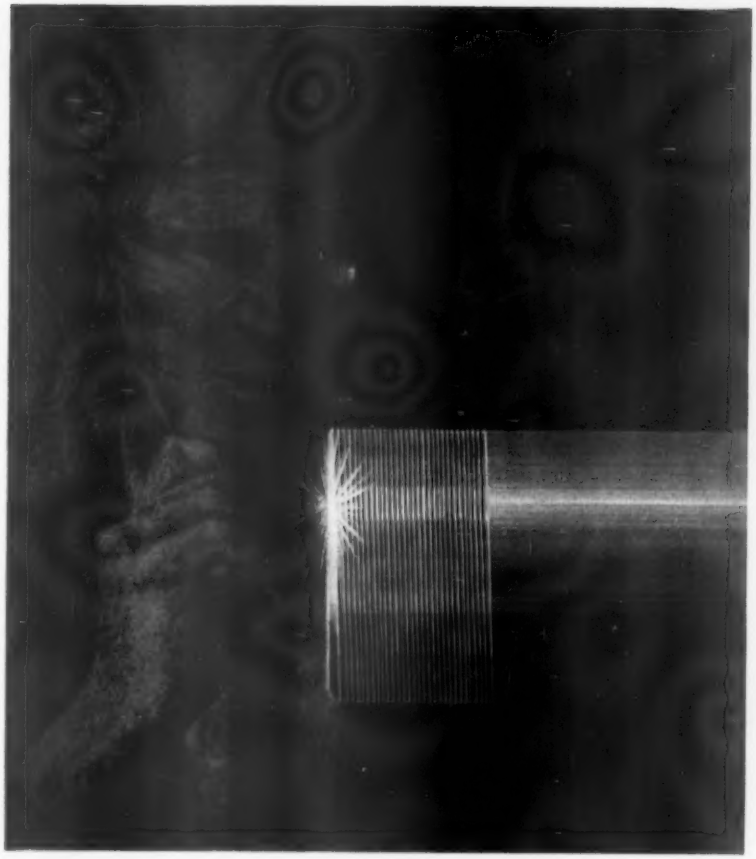
Atlantic's engineers estimate that the high-pressure gas process is applicable to more than 5% of domestic oil reservoirs. They also believe it will provide additional recovery from water-drive fields.

The engineers add that two general reservoir factors determine acceptability of the process: (1) Reservoir pressure must be in excess of 3,000 psi.; and (2) displacement pressure must exceed the oil's saturation pressure.

•

The U.S. Geological Survey has approved Shell Oil Co.'s 17,324-acre Chaffin Unit, Emery County, Colo.

The majority of the block consists of federal land. Shell already is drilling a scheduled Pennsylvanian-Mississippian test on the unit. Other interests



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in the unit include Texas Eastern Transmission, Atlantic Refining, Gulf Oil, Lion Oil, Sinclair Oil & Gas, and British-American Oil Producing.

•

Four Corners Oil & Gas Co. has merged with Four Corners Uranium Corp. to form Four Corners Oil & Minerals Co.

Eugene H. Sanders, of Denver, president and founder of the uranium company, is head of the new company, which owns oil and gas leases covering 108,000 acres in six Rocky Mountain states.

•

Engineering

A portable electronic device that can trace and record the movement of radioisotope-bearing water in oil reservoirs has been developed by the Bureau of Mines.

Weighing less than 20 lb., the monitor can be moved easily from one spot to another to detect the movement of water that has been "tagged" with radioisotopes before being injected. The device helps researchers tell how thoroughly the injected water is penetrating the oil-bearing strata.

The device was designed by F. E. Armstrong and E. A. Pavelka, of Bartlesville, Okla.

•

Drilling Highlights

Arkansas—Bert Wheeler No. 1 Johnson, section 24-9n-20w, Pope County, was dually completed as a gas discovery, flowing 6-million cf/d of gas through ¾-in. choke and perforations at 3,380-403 ft. in the Allen 2 sand, and 7-million cf/d of gas through ¾-in. choke and perforations at 3,830-53 ft. in the Barton A sand. The discovery is 4¼ mi. northwest of Moreland field.

In Lafayette County, Coulston Drilling Co. No. 2 Cornelius Estate, section 31-16s-23w, flowed 264 b/d of oil through ¼-in. choke and perforations at 8,218-29 ft. in the Ford zone of the Smackover. The well is 1 mi. west of the gas-condensate discovery for East Kress City field.

Wyoming—Petroleum Inc. and Mobil Producing Co. No. 1 Cordell, section 8-51n-68w, Crook County, was completed for 231 b/d on the pump through perforations at 5,992-97 ft. in the Dakota. The opener is 4-½ mi. southwest of Moorcroft field, which has production from the Muddy.

West Texas—Gulf Oil Corp. No. 33 W. A. Estes, section 22, Block B19, public school land survey, Ward County, was completed for an estimated 1,269.6 b/d of 37.4-gravity oil, based on 6-hour flow through ½-in. choke and perforations at 7,880-940 ft. The strike is 1½ mi. east of North Ward-Estes field.

Kansas—Cities Service Oil Co. No. 1-B English, section 31-25s-16w, Edwards County, recovered 2,557 ft. of oil, 120 ft. of oil- and gas-cut mud, and 30 ft. of muddy water on drill-stem test at 4,463-95 ft. in a detrital zone above the Mississippian. The prospect is 2 mi. west of Wil Viola pool.

Northeast Louisiana—Barnwell Drilling Co. No. 1 Louisiana Central Oil & Gas, section 23-15n-2e, Caldwell Parish, was dually completed as a confirmation to Gloyd zone gas production and opener for Hill zone gas pay in the Vixen area, flowing 25-million cf/d on open flow through perforations at 6,628-36 ft. in the Gloyd and 14-million cf/d on open flow through perforations at 6,597-605 ft. in the Hill.

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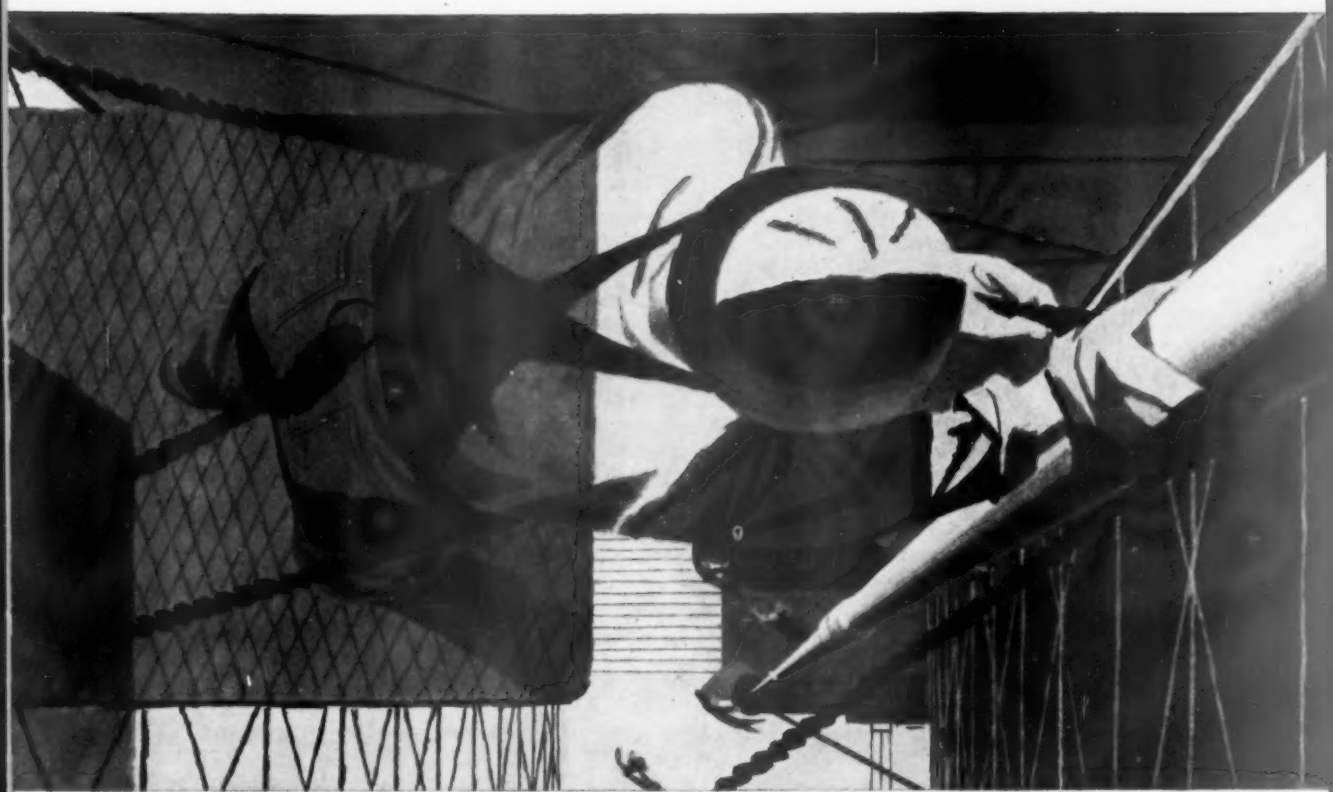

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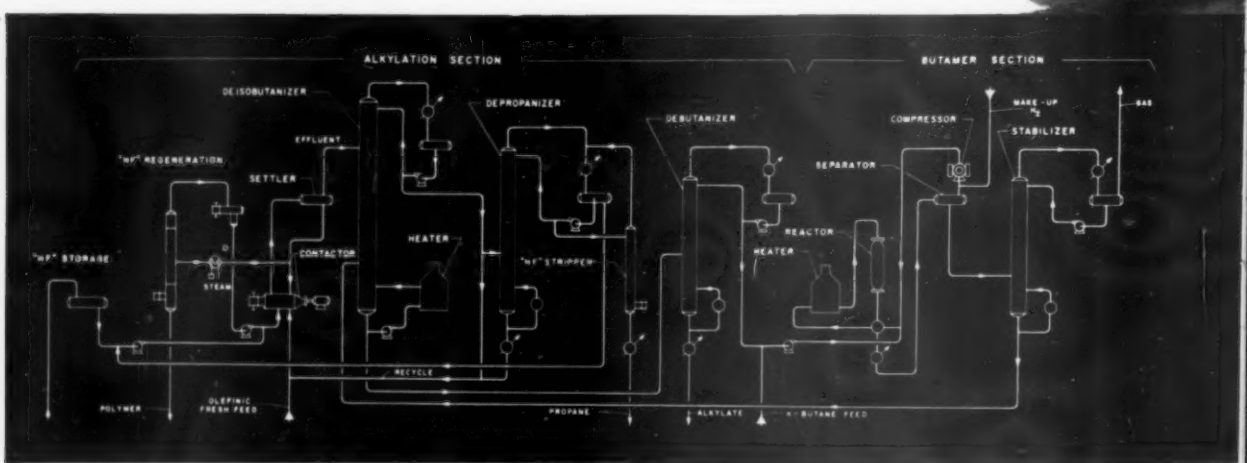
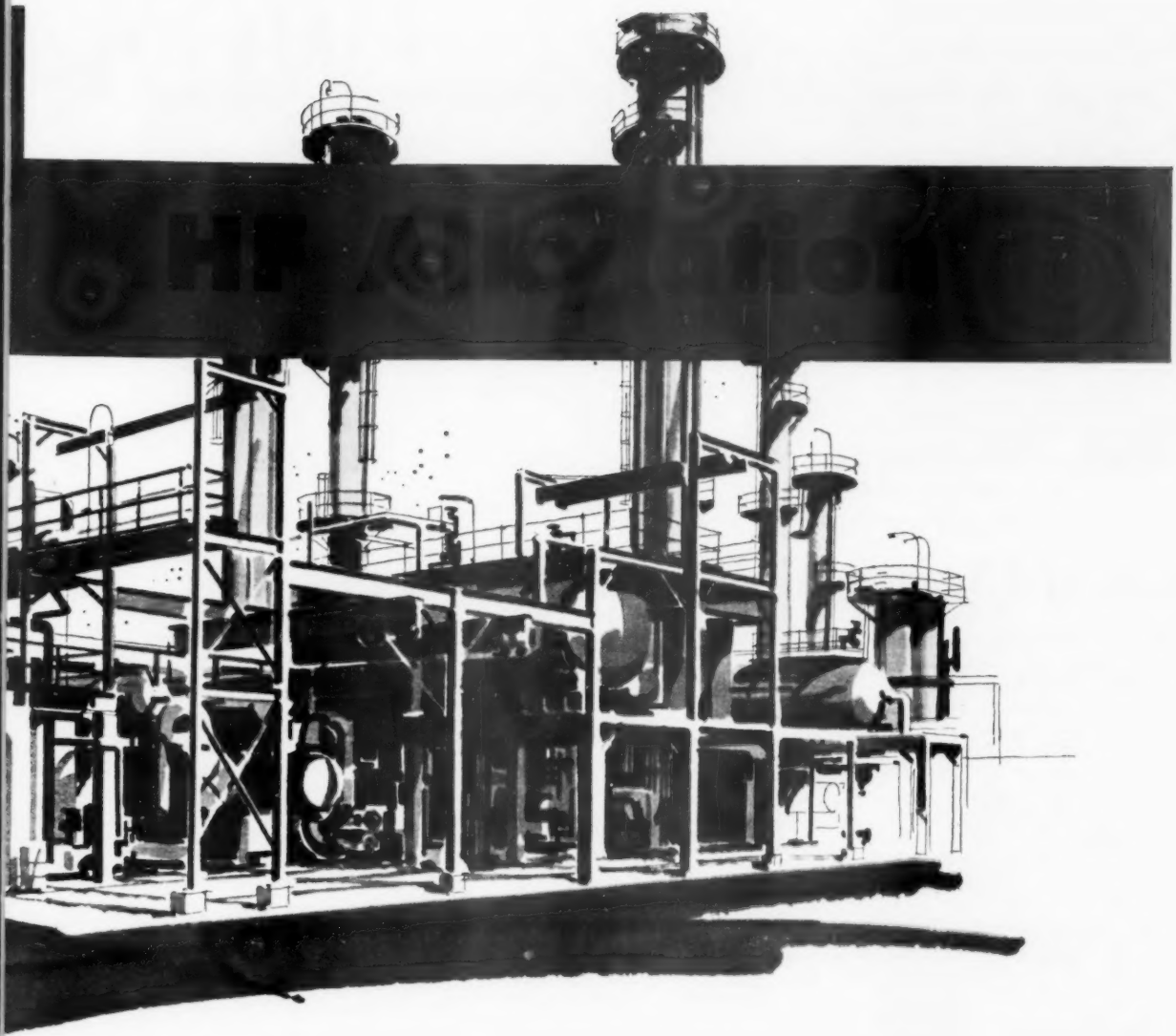


More Than Forty Years Of Leadership In Petroleum Refining Technology



Butamer—Heart of this process is a noncorrosive, stable and rugged platinum-containing catalyst especially developed by UOP. Capable of operating at relatively low temperatures, its use assures a sufficiently high concentration of isobutane in the reactor effluent to eliminate excessive recycle of normal butane.

Operating under hydrogen pressure, with low hydrogen-to-charge ratio, the high catalyst activity results in economical liquid hourly space velocities, thus requiring only a modest catalyst inventory. The mild operating conditions further assure minimum loss to by-products.

HF Alkylation—"HF" Alkylation is a catalytic process which combines olefins such as propylene, butylenes, and amylenes with isoparaffins (usually isobutane) to form a mixture of branched chain hydrocarbons of higher molecular weight known as alkylate for aviation and motor fuel.

These two processes are readily and economically integrated. Together, they form the ideal, most practical method for producing alkylate.

Write for detailed information. Ask also about other UOP refining and petrochemical processes, available to refiners everywhere, for improving operating efficiency and producing better and more profitable petroleum products.

UOP®

UNIVERSAL OIL PRODUCTS COMPANY

30 Algonquin Road, Des Plaines, Illinois, U.S.A.

TEXACO SALESMEN in New York, one of 15 such audiences throughout the country, hear an official outline new sales plans.

PAUL ENDACOTT, president, Phillips Petroleum Co., talks about 1959 prospects to 20,000 salesmen via closed-circuit TV.

Closed-Circuit TV: Oil's New Tool

Some of television's electronic magic is helping oil companies to improve intra-company communications.

Use of the television medium, or of devices connected with it, has been limited so far largely to sales meetings by a few major oil companies.

But the day may not be far off when even a roughneck on some rig deep in the oil patch may be wearing pancake makeup on some show demonstrating new drilling techniques.

And at least one marketer is using closed-circuit TV in a unique way—to keep tabs on his employees and otherwise oversee his service station operations from his own apartment (PW—Mar.27'59,p50).

But in-service training courses for engineers, foreign employees, or others; sales meetings; and annual reports are the most likely present areas for wider use of audio-visual aids.

Closed-circuit television is the biggest audio-visual development now used by some oil companies.

Texaco Inc., Esso Standard Oil Co., British American Oil Co., Shell Oil Co., and Union Oil Co. of California are among the companies that have already used closed-circuit TV.

In each of these cases, all of the technical elements, such as lines, relays, and cameras, and most of the creative elements, such as production, direction, and scripts, were supervised and controlled by TelePrompTer Corp.

Texaco turned to closed-circuit TV early this year to reach an estimated 4,500 salesmen, distributors, and top personnel in 15 key cities.

The Texaco program outlined the company's merchandising and sales techniques, reports on products and services, and its plans for next year.

Early this year, Phillips Petroleum Co. put on the largest closed-circuit telecast ever made in the petroleum industry—a 36-city telecast viewed by 20,000 sales personnel.

A Phillips spokesman reports:

"The TelePrompTer people were here in Bartlesville (Okla.) for quite a period of time, working with us on our closed-circuit presentation.

"We told them what we wanted to get across, and they supplied the technical knowledge for doing it. They also worked with our people in writing the script, supplying the props, and working out the timing.

"Cameras and some of the equipment were borrowed from a Tulsa television station, along with some of the operating personnel. But much of the equipment, all of the directors, lighting experts, technical men, and writers were supplied by TelePrompTer.

"The Teleprompter itself—a sort of mechanized 'idiot card'—was built in adjacent to the cameras for our presentation.

"Our people could look straight into the camera and appear to be making an excellent impromptu address.

"Actually, very little memory work was required, aside from over-all familiarization with the text."

The various electronic aids now available hold strong potential for oil-company training programs, involving domestic or foreign personnel.

Remote pickups of new equipment operating in the field can be worked into a program easily. This on-the-spot showing can then be supplemented with prepared cutaway pictures, slides, or drawings of the equipment.

And when the program is over, the company has a kinescope, which can be used and re-used as a film can, but without the high costs of the latter.

In some of the military training programs, involving members of NATO countries, the speaker talks in English, but the translation shows up on a projection screen in the language of the viewers.

In addition to the now-familiar teleprompter in television and on speakers' platforms, the company offers telemation, which has been dubbed the "electronic stage manager."

This device permits automatic synchronization of all sorts of stage effects with the speaker's voice. Sound effects and lighting changes may be "cued" into a talk at any point. This is done by attaching small metal strips under the selected word in the manuscript. When this is run through the Teleprompter and the selected word is reached, the metal strip triggers the desired stage effect, automatically.

The company also has a five-panel, rear-projection screen, in which all panels can be integrated to show movies, or slides, on one or more subjects. All panels can be controlled by telemation.

This rear-screen setup is particularly effective in training presentations. The large center panel may be used to picture a new instrument, for example, and the four adjacent panels may be used to show closeups of various parts.

NOW! THE BOLD ADVANCE IN VALVE DESIGN

W-K-M's NEW *Pressure Sealing* GATE VALVE

This superior valve gives you all these advantages:

- Tight seal both up and downstream in open and closed position
- Full bore, through-conduit
- Non-lubricated
- Seats automatically adjust for wear
- Automatic relief of excessive body pressure
- Ideal for abrasive ladings, light gases, volatile liquids up to 250° F.
- Easy to overhaul on the line

ASA 150 lb. (275 cwp) and ASA 300 lb. (720 cwp)

ANOTHER OUTSTANDING PRODUCT OF **W-K-M's** *Creative Engineering*

NOW! THE BOLD ADVANCE IN VALVE DESIGN

W-K-M's NEW *Pressure Sealing* GATE VALVE

Tested and Proved in the Toughest Services!

Enthusiastic, completely favorable user reports affirm the superior quality and effortless operation of W-K-M's new Pressure Sealing Gate Valve. "Handles all the sludge in a gas blowout line easily—works better than any valve we've used," states a petroleum engineer. A foreman says,"... easiest operating valve I ever saw ... smoothest working valve made." Similar reports covering many other services are in W-K-M's engineering test data files.

Turn the page to see the design features that make this unique valve so outstanding

ASA 150 lb. (275 cwp) and ASA 300 lb. (720 cwp)

ANOTHER OUTSTANDING PRODUCT OF

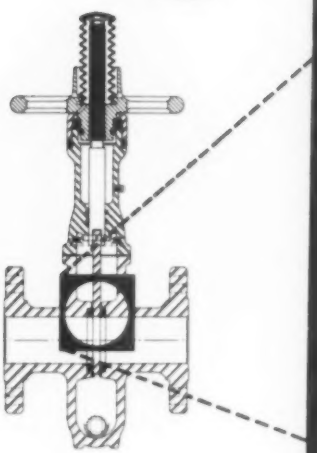
W-K-M

DIVISION OF ACF INDUSTRIES INCORPORATED
P. O. BOX 2117, HOUSTON, TEXAS

Floating

Combination indicator and stem protector. A neoprene rubber bellows compounded to a bright yellow color for long-range visibility—extends above the handwheel when the valve is open; retracts into the handwheel when the valve is closed. It also protects the stem threads from dirt and corrosion.

The stem is heat-treated, hardened stainless steel, with double lead Acme threads for fast operation.



Anti-friction bearings support the operation of the stem nut and handwheel. This feature contributes to easier operation and longer, trouble-free life.

A grease fitting is provided in the bonnet to allow lubrication of the stem threads and bearings.

"O" rings are used for stem packing. They provide an ideal seal and eliminate repacking procedure required with conventional valves.

The bonnet-body connection is a rigid bolted construction with a rubber primary seal and metal-to-metal secondary seal. This seal eliminates the high bolt loads required by conventional bolted connections.

The gate is made of steel, hard-chrome-plated for protection against wear and corrosion.

The floating seats are unique in design. Each seat consists of two kinds of rubber, formulated to W-K-M's specifications, molded to a hardened steel insert. There is a full bore opening, the same diameter as the port, through the insert.

Soft rubber, for sealing, is on the back side of each seat. Tougher, abrasive-resistant rubber, to resist wear, is on the front or gate side. The steel insert is ringed with holes. Pressure forces the soft rubber through these holes, reinforcing the tough rubber and compensating for any wear.

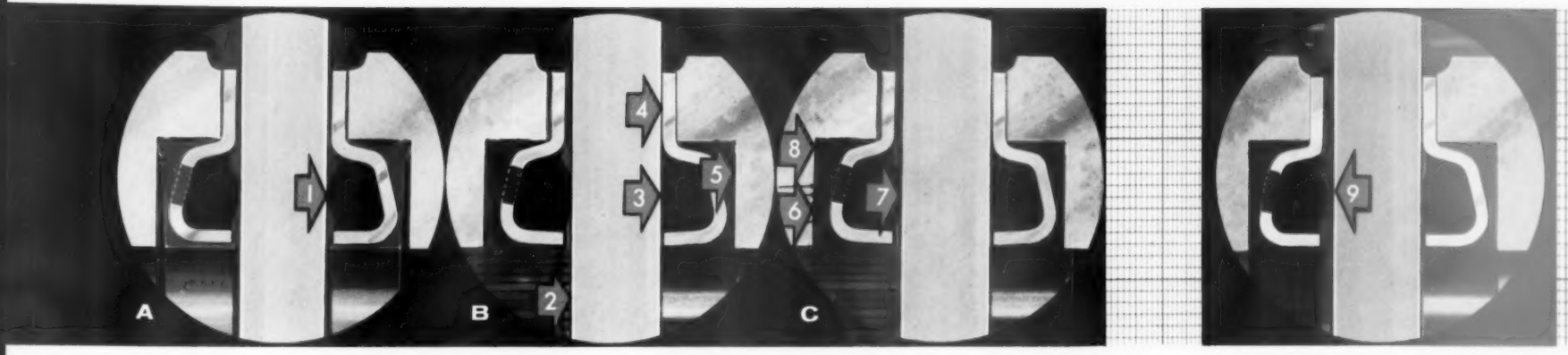
The body and bonnet are steel.

The port is round, the same diameter as the I. D. of the pipe.

Through-conduit construction permits maximum flow, minimum turbulence and pressure drop.

©1959, ACF INDUSTRIES, INCORPORATED, W-K-M DIVISION

Seats Give Perfect Seal



Line Pressure Seals the Seats!

Illustration A shows the gate in the closed position as it forms a primary seal (1) with the raised ring of tough, firm rubber on the face of each seat.

As line pressure (2) is applied to the valve in Illustration B, the gate is forced against the rubber ring on the downstream seat (3) and compresses it until the gate rests against the hardened steel insert (4). This provides a tight seal between the gate and the rubber on the face of the seat, and a secondary metal-to-metal seal. The action also forces the soft rubber on the back of the seat tightly into its recess (5) and prevents any downstream flow at this point. This double action provides a bubble-tight downstream seal.

The upstream seal shown in Illustration C is caused by line pressure forcing its way into the seat recess behind the upstream seat (6), thereby moving the seat against the gate (7). This pressure is sufficient to achieve a positive seal between the gate and the ring of tough rubber on the face of the seat. At the same time, the raised rim of soft rubber on the back of the seat forms a tight seal with the seat recess (8).

These double-action floating seats provide tight, positive seals—both upstream and downstream.

W-K-M's NEW *Pressure Sealing* GATE VALVE

Two-Way Valve

W-K-M's Pressure Sealing Gate Valve is a two-way valve. It may be installed with the pressure on either side. This valve is especially well suited for block and bleed service since it seals positively both upstream and downstream. The body may be bled of pressure with the gate in either the fully open or fully closed position.

Full Bore, Through-conduit

The full bore, through-conduit gate construction provides a perfectly smooth bore through the valve, eliminating pockets or cavities in which foreign matter might accumulate. Result: perfectly smooth flow with no more turbulence or pressure drop than through an equal length of pipe.

IMPORTANT SAFETY FEATURE:

Automatic Relief of Excessive Body Pressure

This valve has been designed to automatically relieve excessive body pressure caused by thermal expansion. The excess pressure forces the upstream seat away from the gate (9), allowing it to bleed into the line.

Change Seats in Minutes *...on the Line!*

Construction of the valve is so strong and materials are so durable that users so far have found maintenance unnecessary. But in time every material wears, and some maintenance is required.

When that time comes you can change the seats in W-K-M's Pressure Sealing Gate Valve (2″ through 12″) in 15 to 30 minutes *on the line*. The only tools needed are a wrench to loosen the body bolts, and a pair of pliers.

ONE OF THE MOST VERSATILE VALVES EVER PRODUCED

Natural Gas Transmission

Crude Oil

Butane/Propane

Natural Gas Distribution

Proved in the Field!

This new valve is extremely versatile. It's designed for pressures up to 720 psi (cwp) and temperatures up to 250° F. Here are only a few of the services in which it will perform efficiently and economically.

Gasoline
Abrasive Slurries
Alkaline Solutions
Solvents
Nitric Acid
Sulphuric Acid
Methyl, Ethyl, Butyl, Propyl Alcohols
Ethylene Glycol
Butyl Stearate
Kerosene
Naphtha
Stoddard's Solvent
Carbon Tetrachloride
Water
Air

SPECIFICATIONS

Valve Size	2"		3"		4"		6"		8"		10"		12" *	
ASA Rating (lbs.)	150	300	150	300	150	300	150	300	150	300	150	300	150	300
Screw End	X	X	X											
Weld End	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Weld by Flange	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flanged End	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gear Operated							X	X	X	X	X	X	X	X

*14" and larger available on request

AVAILABLE NOW at competitive prices from your supplier.

For complete information about W-K-M's new Pressure Sealing Gate Valve . . .

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W-K-M Division of ACF Industries, Incorporated P. O. Box 2117 Houston 1, Texas

W-K-M SERVING INDUSTRY 40 YEARS

PRINTED IN U.S.A.

Record Year for Gas Pipeline Growth

The natural gas pipeline industry continued to expand on nearly all fronts last year, and current predictions point to even greater growth in the future.

A comparison of figures just released by the American Gas Assn. on the industry's spending in 1958 for new line mileage and compressor horsepower, with corresponding figures for 1957 and 1956, reflects a pattern of steady growth in the industry.

And AGA forecasts that the major factors behind the industry's over-all expansion activities—the increasing demand for natural gas as a domestic, industrial, and agricultural fuel, and the policy of maintaining large reserves—will compel even greater advances in the future.

The figures are compiled annually by AGA through a study of the operations of all gas transmission companies. By AGA definition, a "gas transmission company" is one which devotes at least 95% of its lines to long distance transmission of natural gas and sells at least 95% of the gas moving through its lines to other companies for resale.

The industry will spend an estimated $809-million for construction of new transmission facilities this year—a jump of $94-million over 1958 to a new high.

Last year, AGA estimated that pipeline facilities would increase 65% in the next 12 years. It estimated that $14-billion would have to be spent in the period in order to accomplish the expansion and that in the year 1970 alone $1.2-billion would be spent.

Spending for new transmission facilities in 1958 was 5% lower than in 1957. AGA figures show that gas pipeline companies spent $715-million last year, compared with $753-million in 1957.

The drop is laid by the industry to two factors: the recession and the Memphis case.

During the recession, transmission companies adopted a policy of retrenchment as did other industries.

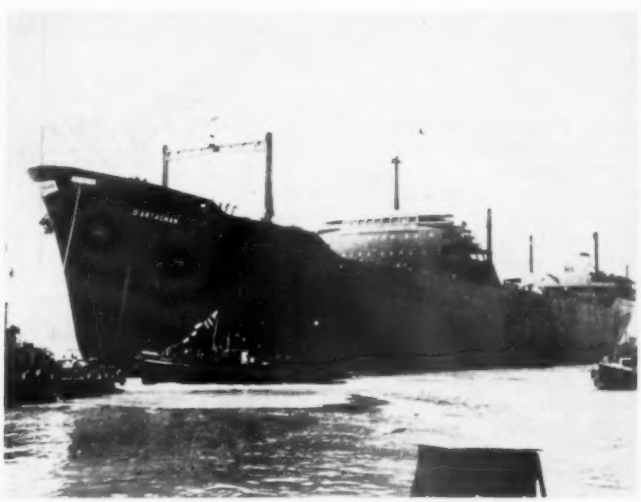
In the Memphis case, the U. S. Circuit Court of Appeals for the District of Columbia, in November, 1957, revoked the right of transmission companies to set new rates for their distributors without first seeking their permission (PW—Nov.29'57,p12).

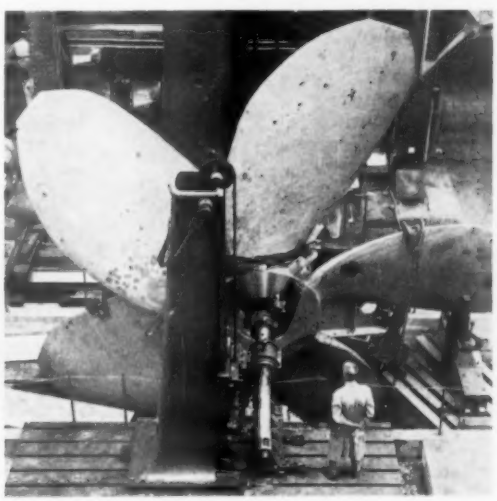
Last December, the U. S. Supreme Court overruled the circuit court, and reinstated the right to set new rates pending Federal Power Commission review (PW—Dec.12'58,p8).

But in the 13 months that intervened between the two decisions, the companies had to follow a cautious policy with regard to expansion.

Despite these temporary crimps, however, the industry demonstrated its ability to move ahead—and earn a profit.

- Compressor horsepower increased by 6%—from 4.9-million hp. at the end of 1957 to 5.2-million hp. a year later.
- Mileage showed a more modest increase—3.3%. Total mileage was 165,360 at the end of 1958, against 160,110 in 1957.
- Net income in 1958 was up 2% over 1957. The companies earned $252-million last year, compared with $246-million the year before—a gain of $6-million.
- The biggest jump was in the amount of operating revenues, which rose 14%, from $2,116,000,000 in 1957 to $2,410,000,000 last year.
- Total value of "gross plant," rose 9%. In 1958, assets were valued at $7,263,000,000, compared with $6,665,000,000 for 1957.





French Shipyards Increase Tanker-Building Activity

Dwarfing the man in the foreground, a massive ship propeller for a new Tidewater Oil Co. 72,000-ton tanker goes through the final stages of manufacture at a foundry in Le Havre, France. When completed, the prop will measure nearly 25 ft. in diameter and weigh 45 tons. The vessel, for which the keel was laid Nov. 18, will be powered by a 22,000-hp. engine. It will be about 840 ft. in length. As work proceeds on the Tidewater ship, other tankers are being launched in France, such as Socony Mobil's 48,390-ton D'Artagnan (above)—the largest ever to be built in that country up to this time, and too big to pass through the Suez Canal. The Caltex Strasbourg, launched recently at Rouen, weighed 18,000 tons.

What's New / IN TRANSPORTATION AND STORAGE

The Federal Power Commission has granted temporary authority to Transcontinental Gas Pipeline Co. to expand its transmission facilities at an estimated cost of $29,457,000.

Transcontinental will build four new compressor stations with a combined capacity of 37,280 hp.; add a total of 18,000 hp. to eight existing stations; construct three distribution meter stations; and build 13 mi. of 24-in. supply loop pipelines and 17.7 mi. of 20-in. sales loop lines.

The new facilities are planned as part of a larger project, which would increase line capacity by 206-million cf/d, and cost $76,910,449. Existing customers would get 156-million cf/d of the increase, and Consolidated Edison Co. of New York would get the remainder.

FPC has not yet ruled on the big project.

•

El Paso Natural Gas Co. and Pacific Northwest Pipeline Corp. have filed for Federal Power Commission approval to build a natural gas pipeline system from Thistle, Utah, to southern California (PW—Aug.8'58, p16).

Cost of proposed facilities is estimated at $58,858,000.

Most of the outlays would be made by El Paso, which would lay 394.6 mi. of 34-in. line. El Paso would use the line to move a maximum of 470-million cu. ft. of gas daily to Southern California Gas Co. and Southern Counties Gas Co., both of Los Angeles. The gas would be bought from Colorado Interstate Gas Co. and Pacific Northwest.

Pacific Northwest's part of the project is a measuring and regulating station to cost about $173,000.

•

Russia has announced that it is building a tanker in which the tanks are situated above the water line, for shipment of petroleum products with low coagulation points.

The new design does away with the necessity for heating equipment to maintain the cargo in its liquid state, the Soviets claim.

In conventionally designed tankers, where the tanks are set deep in the hull for stability, heat is needed to counteract the cooling effect of the water.

•

Natural gas is now moving through South Carolina Electric & Gas Co.'s new Aiken-Lake Murray pipeline.

The recently completed 47-mi., 16-in. line will ultimately supply several communities in the "Ridge area" of South Carolina with their first natural gas.

•

Imperial Oil Ltd. has begun shipments of liquid ethylene by tank trailer truck from its Sarnia (Ont.) refinery to Union Carbide Canada's plant at Montreal.

This method of shipment, already in use in Europe, involves maintaining the temperature of the ethylene at minus 155F., in insulated tanks 36 ft. long and 8 ft. wide, for the 24 hours it takes to make the trip.

•

Northern Natural Gas Co., Omaha, has asked the Federal Power Commission to approve a 9.4% hike in its natural gas rates.

Northern says it needs the increase, which would affect 35 utility customers, to cover increased service costs and assure a 6.75% rate of return, instead of its present 6.5% return.

•

Tidewater Oil Co. is erecting three new gasoline storage tanks at its San Pedro (Calif.) marine terminal.

One tank will have a capacity of 67,000 bbl.; the other two will have capacities of 43,000 bbl. each.

Completion is slated for the fall.

•

Lone Star Gas Co. has started construction of a 36-mi., 20-in. pipeline from a point 2 mi. southeast of Duncanville to a point 3 mi. north of Chatfield, both in East Texas.

Lone star says the purpose of the line is to increase the volume of natural gas moved to the Dallas area and to utilize fully underground storage facilities in Henderson County.

•

Gulf Oil Corp. recently added the 29,250-ton tanker Gulfpride to its U.S.-flag fleet.

The Gulfpride was the second 29,250-tonner to be built for Gulf at Bethlehem Steel Co.'s Bethlehem Sparrows Point (Md.) shipyard, under a contract calling for six vessels of the same size.

Delivery of the remaining four is expected before the end of next year. Total cost of the ships will be $114-million.

•

Preassembled Joints

Insulated flange joints used to check electrolytic corrosion in underground pipe are preassembled at Tube Turns division of Chemetron Corp., Louisville, Ky., where the new method of assembly was developed. The company says preassembly minimizes difficulties in field assembly, provides maximum operating pressure certification, and assures zero electrical conductivity for corrosion prevention.

Engineering

A "pipeline" information system" for measuring, transmitting, and recording flow, pressure, temperature, and other pipeline variables, has been developed by Fischer & Porter Co., Hatboro, Pa.

Data are measured at remote points and relayed by standard communication or telemetering equipment to a central control station where they are converted into digital form and recorded by an automatic typewriter for continuous reading. The system also has continuous alarm monitoring.

Improve pipeline efficiency with the

new Honeywell Dur-O-Pulse telemetering system

YOUR CHOICE OF TRANSMITTERS

Eccentric scale indicating transmitter

Single-pen recording transmitter

***ElectroniK* single-pen recording transmitter**

TRANSMITTER FEATURES

• Indication and/or recording • Electric or pneumatic control • Integration • Auxiliary contacts • Remote set controller index receiver • No load on primary element by transmitting mechanism or contacts

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Private wires • Telegraph or telephone circuits • Time multiplexing • Carrier current channels • Tone multiplexing • Radio channels, including microwave, UHF and VHF

RECEIVER FEATURES

• Indication and/or recording • Electric or pneumatic control • Integration • Auxiliary contacts • Remote set controller index transmitter • As many as three pens in one circular chart recording receiver

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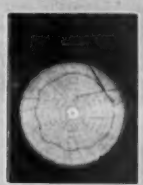

Recording receiver

Indicating retransmitting receiver

***ElectroniK* recording receiver**

Use the new Honeywell *Dur-O-Pulse* telemetering system for fast, accurate, versatile control of natural gas or petroleum pumping stations. It carries process variable measurements up to 100 miles by continuous telephone or telegraph wire pair *without repeaters*, or by microwave, radio or power line carrier systems.

Dur-O-Pulse consists of a transmitter in a standard Honeywell recorder or indicator at the point of measurement, the intervening wiring, a power pack, and a receiver in another Honeywell instrument at the receiving location. Both transmitter and receiver can embody a wide variety of control functions.

You can get complete details from your nearby Honeywell field engineer. Call him today . . . he's as near as your phone.

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H HONEYWELL *First in Control*

DEPT/Processing & Petrochemicals

What's New in Catalysts?

Petroleum Week survey finds that many new or improved compounds are now being introduced. They're tougher, more active, more economical to use.

For the second time since 1935, when catalysts first became an essential tool in refinery operation, substantial changes are taking place in their manufacture.

The first radical change took place when fixed-bed catalytic cracking gave way to continuous methods. That was made possible thanks to the production of an entirely new type of catalyst; old-type, pellet catalysts were inadequate for the fluid cat-cracking methods. Finely powdered small hard beads, and finely powdered catalysts, flowing as freely as a fluid, came into existence.

The present changes do not affect, to the same degree, the physical appearance of the catalysts. But they alter their composition and their texture. The new catalysts are:

- Considerably tougher;
- Remarkably more active;
- Less susceptible to physical or chemical deterioration;
- And, consequently, much more economical to use.

Most of the manufacturers producing refinery catalysts on a commercial scale said, in response to a PETROLEUM WEEK survey last week, that they have recently put on the market new, greatly improved, products; that they are in the process of developing some; or that they will announce their production in the very near future.

Cracking Catalysts

There has been a gradual, unspectacular improvement in cracking catalyst quality, resulting in higher activity level and lower catalyst consumption, says John Gourlie, of Davison Chemical Co. As an indication of the progress made, Davison, which markets 55% of the synthetic fluid cracking catalysts in the country, points out that a pound of catalyst will now process more than 3 bbl. of charge stock, as against only 2 bbl. about seven years ago.

American Cyanamid Co. has developed a new, synthetic silica-magnesia fluid cracking catalyst, which, it says, may replace its conventional "Aerocat" silica-alumina catalysts in many cases.

"The combination of silica and magnesia as a cracking catalyst is not new," says Ben Loper, technical director of Cyanamid's refinery chemicals department. "It always failed before, however, because it could take only a limited number of regenerations. This weakness has been overcome, so that the catalyst's life is now remarkably long."

The new silica-magnesia catalyst is said to increase the yield of gasoline by 10%, for a conversion rate of 40% to 60%, with a corresponding increase in the yield of light distillates.

It has, admittedly, one drawback: The octane rating of the gasoline is a little lower, and more "reforming" is needed. But, from the over-all economical standpoint, it often shows an appreciable profit.

Several manufacturers of catalysts are at present trying out combinations of natural and synthetic products. Such mixtures are currently undergoing commercial evaluation; there has not yet been time to determine their future place in the industry.

A natural catalyst, as opposed to a synthetic one, is prepared with natural materials, such as clays, activated by chemical treatment. It is much cheaper to produce than a synthetic product, but does not possess some of the qualities of a synthetic catalyst.

It is believed that some of these qualities may be imparted to the combination of a natural and a synthetic product, without raising excessively the attractive low price of the natural catalyst.

National Aluminate Corp. has recently introduced a new, inexpensive fluid-cracking catalyst. It is a combination of treated clay, silica, and alumina.

"It is being used currently in six commercial units," says W. P. Hettinger, Nalco's director of research, "at a saving of $80 per ton over low-alumina synthetic catalysts (13% alumina).

Houdry Process Corp., the maker of the original natural cracking catalyst used in the fixed-bed process, has changed from its original pelleted bentonite clay to kaolin "Kaospheres." Their diameter is about 5/32 in., which is not a microspheroidal size. These Kaospheres are said to produce a gasoline having an octane number well in line with that obtained from synthetic catalysts.

"This catalyst is more resistant to steam and temperature attacks than the synthetic catalysts," says H. A. Shabaker, of Houdry. "It has a good activity life, and still retains the lower-price advantage of a natural catalyst."

Socony Mobil Oil Co. has substantially modified the manufacture of its synthetic silica-alumina-chrome beads, at its Paulsboro (N. J.) plant. These beads, made since 1946—chrome was added in 1948 to reduce after-burning—are used for the moving-bed cracking process.

The main difference in manufacture consists in reintroducing into the starting reactant solutions of acid-alum and sodium silicate the refuse—oversizes and fines—separated from the beads between the dryers and the final kiln, after submitting this refuse to a unique pulverization process.

While this procedure has reduced the maximum capacity of the plant by 20%, it imparts to the new "Durabeads" certain important qualities. Among them are:

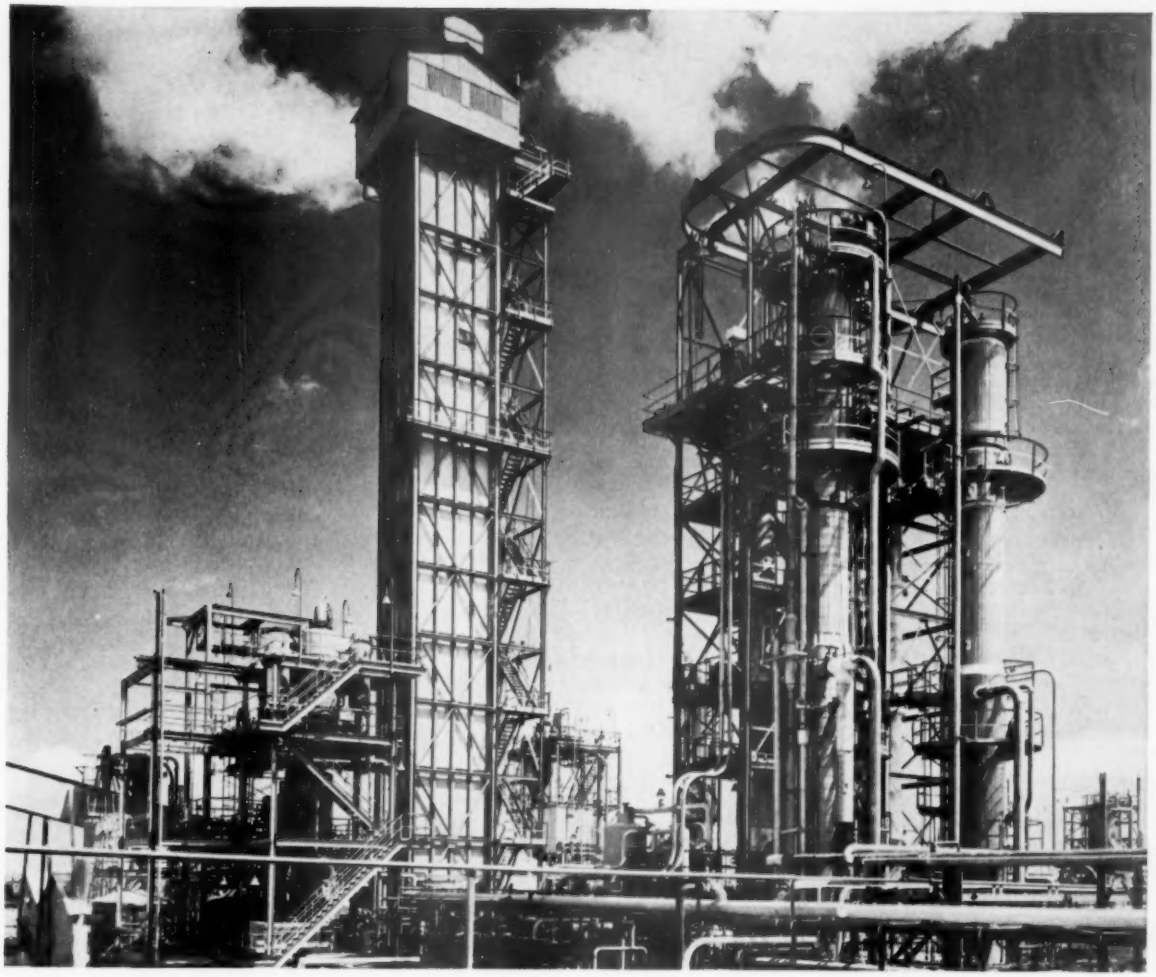
- High density, allowing a higher oil charge to the unit, higher vapor rates, and higher pressures.
- Better resistance against breakage.
- Lower surface area and pore volume, but larger pore diameter, permitting a much better regeneration rate.
- Less loss by attrition (wear).
- More even size distribution, and therefore better activity.

"The rate of consumption," say the Socony technicians, "should be down to about 0.1 lb. of catalyst per bbl. of oil charge." Magnolia Petroleum

A $100-Million Market

The yearly market for refinery catalysts in the U.S. and Canada is, at present, in the neighborhood of $100-million, divided as follows:

Type of catalyst	Millions of dollars
Synthetic fluid cracking	45
Synthetic beads	12
Clay & combined catalysts	15
Reforming catalysts	20
Hydrodesulfurization	4 plus
TOTAL	96 plus



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FOSTER WHEELER

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Co. reports that it has obtained a reduction of 70% in catalyst makeup rate in a TCC unit using Durabeads, a saving of $475 per day over the former chrome beads.

Socony also makes a higher-density "Heavy Durabead," where still better "sealing" of the cracking unit is desired, with resulting greater vapor velocities. It costs a little more per pound than the regular Durabeads.

One interesting part of the new Durabead manufacture is the preparation of the microfines which are reincorporated into the process. The returns from the sizing screens are pulverized in a special superheated steam pulverizer, which reduces them to a powder as fine as tobacco smoke.

To obtain such extreme fineness, the refuse is fed tangentially, together with steam at 165 psi. and 600F, moving at extremely high speed, inside a steel ring, against which micropulverization is accomplished (picture, above). The steam is then separated from the microfines, first in a cyclone, then in an electrostatic precipitator. Finally, the microfines are mixed with water to make a slurry of carefully controlled concentration, which is mixed with gel-forming solutions.

Reforming Catalysts

The long life of most reforming catalysts came as a surprise even to those who manufacture them. One pound of reforming catalyst will suffice for about 200 bbl. of gasoline production.

And even when the catalyst must be replaced, the platinum, which is the active ingredient, and the only costly part of the catalyst (platinum costs at present $77 an ounce), is recovered and used over and over again.

"The sale of reforming catalyst," says Ben Loper of Cyanamid, "is not a 'repeat order' business. Thus, although it involves arduous research to improve the yield, there's not much profit in it for the catalyst manufacturer. An increased gasoline yield of as little as 1% in a refinery reforming 100,000 b/d means about $6,000 a day to the refiner, but to us it represents only 5 lb. of replacement catalyst, or about $15."

A new, extruded alumina-base reforming catalyst, expected to have high activity and complete regenerability, is being developed by Cyanamid.

"These two qualities are seldom found simultaneously in a catalyst," according to the manufacturer. Cyanamid also carries on, at its Stamford laboratory, pilot-plant-work on high-severity reforming catalysts.

DURABEAD REFUSE and superheated steam enter tangentially into special pulverizer. Microfines thus produced are reintroduced into manufacturing cycle.

A new "Unifiner" cobalt-molybdate reforming catalyst on an alumina-silica carrier has been developed by Harshaw Chemical Co. in cooperation with Union Oil Co. of California.

"The presence of silica greatly increases thermal stability," says E. S. Ray, division manager of Harshaw, "and provides the user with a bonus in operating security. This is a low-density catalyst weighing approximately 40 lb. per cu. ft. compared with 60 lb. per cu. ft. for our other catalysts. Less of it is thus required to fill a given reactor, affording an economical advantage in some cases."

Special Catalysts

The greatest variety of new catalysts are being produced, and the greatest progress in their use is being accomplished, in the field of special treatments, such as desulfurization, hydrogenation, and dehydrogenation, which are on the borderline between refinery and petrochemical operations.

It is beginning to appear that, through the use of the proper catalyst, conversion of chemicals into more valuable products can be effected with almost unlimited possibilities. "The use of catalysts," says Loper of Cyanamid, "will grow and become more specialized. For each type of chemical operation work is directed toward one specific catalyst to give optimum results."

Cyanamid has in production a new alumina - base hydrodesulfurization catalyst which is capable of taking 100% of sulfur content out of a feedstock. It is also developing currently certain specialized catalysts for the removal of sulfur from crude oil, for hydrogen production, and other applications.

A hydroisomerization catalyst containing a precious metal, said to be of such enhanced activity and selectivity that it permits near-equilibrium isomerization of light paraffins, has been developed by Universal Oil Products Co. It is designated as I-A, and will produce isobutane, isopentane, and isohexane at temperatures (200 to 400F) where heretofore only expendable catalysts could be used.

New organo-metallic polymerization catalysts are being developed for the conversion of olefins into polypropylene and linear polyethylene.

The extraordinary variety of reactions obtainable with these catalysts has been studied by Dr. K. Ziegler in Germany, and by Prof. G. Natta in Italy. Their application in this country is currently spreading at a fast rate.

Girdler Catalysts Division of Chemetron Corp. has just introduced six new hydrogenation catalysts.

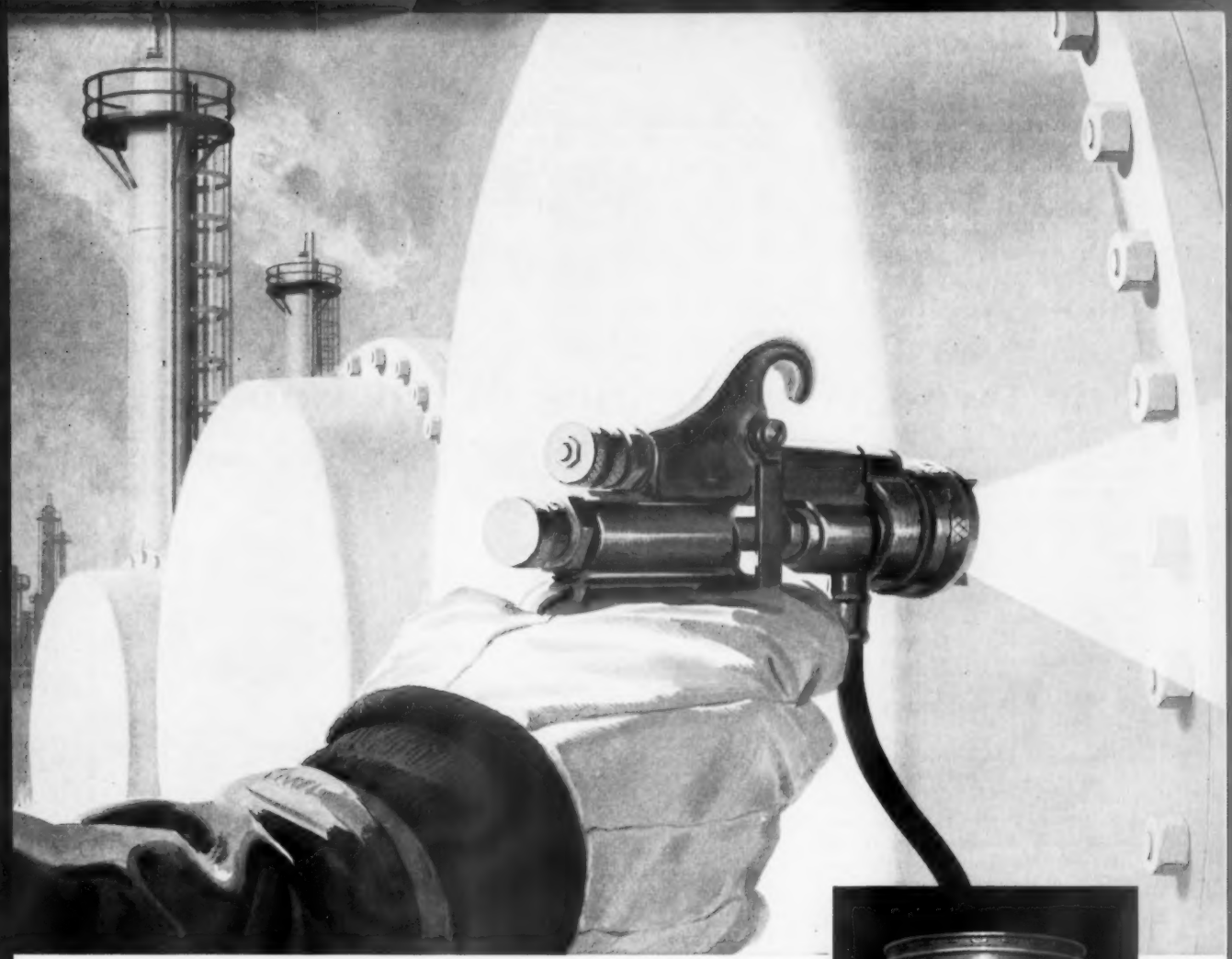
Its G-52 is a reduced, stabilized nickel-oxide catalyst for fixed-bed hydrogenation—for example, for the conversion of benzene into cyclohexane. A similar product, G-33, is a nonreduced nickel oxide, used for the purification of hydrogen streams by conversion of carbon monoxide into methane.

G-54 is an improved cobalt-molybdate catalyst for the hydrogenation of acetylene and other diolefins in ethylene streams. Girdler says this catalyst has an activity cycle eight times longer than the previous Girlder catalyst used for that purpose. It remains active 40 weeks (as against 5 weeks), and can purify as much as 500,000 lb. of ethylene feed.

G-55 and G-58 are two catalysts that are used, for better selectivity, where one Girdler catalyst was used before. One is applied to the purification of propylene, the other to the purification of ethylene or ethane. These are "promoted" palladium pelleted catalysts on a specially treated alumina carrier.

G-56 is a very active nickel catalyst for the production of hydrogen from hydrocarbons. It has a life of over five years, and a "space velocity" two to four times greater than existing catalysts, the company says. (The "space velocity" is the ratio of the volume of the feed stock to the volume available in the reactor.) Thus, much lower quantities of catalysts can be used for the same result.

A nonrecoverable catalyst for production of polyurethane foam has



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been developed by Houdry. It is a liquid, which is mixed with the liquid feedstock to promote its polymerization. When the reaction is completed, the catalyst remains in the finished product. It is called a "homogenous catalyst" and bears the tradename of Dabco.

Two new extruded cobalt-molybdate desulfurization catalysts have been put on the market by Nalco. Pellets are only 1/16 in. in diameter, and this, Nalco says, gives them the ability to treat heavier feedstocks than the current ⅛-in. pellets.

Another Nalco catalyst, Nalcomo 810, is a very-low-cost desulfurization catalyst, which is recommended for feedstocks containing arsenic. Since catalysts for such feedstock must be replaced quite frequently, its low price keeps the operation on an economical level.

Davison, later this year, plans to put on the market an improved butane dehydrogenation catalyst.

Its details have not yet been announced.

For Two-Cycle Engines: What Lube?

Considerable interest is being displayed by refiners in the development of a correct lubricant for two-cycle gasoline engines.

This is justified by the increasing popularity of outboard motors, power lawnmowers, and engine-powered tools, as well as scooters and several brands of small European cars with two-cycle engines. Well over half-a-million gasoline engines of the two-cycle type will be sold in the U. S. in 1959, and more than three times that many in Europe.

The main difference between the lubrication of a conventional four-cycle engine and that of a two-cycle one is that, in the latter, the lubricating oil is introduced into the engine with the fuel. The usual proportion of lubricant to gasoline is 5%.

Many oil companies have been conducting experiments aimed at increasing our rather limited knowledge of two-cycle-engine lubrication. Some of their results were revealed at the recent summer meeting of the Society of Automotive Engineers.

The four principal qualities that are required from a lube oil for a two-cycle engine are: ability to keep the piston clean, low sparkplug fouling, absence of blockage of the engine ports, and low engine wear.

J. W. Savin, of Atlantic Refining Co., has devised a practical chart for recording and comparing these four qualities in an oil. He plots them on two perpendicular diameters of a circle (diagram, above). The poorest rating, for each quality, is at the center; the best is at the circumference. The better an oil, the closer its "profile" approaches that circumference.

Additives are essential to reach an acceptable over-all performance. But additive oils designed for four-cycle gasoline engines do not perform properly in two-cycle engines.

Proper choice of base-oil blend and of additives is essential in meeting all four of the requirements for a two-cycle engine lubricant, H. V. Lowther, G. H. Shea, and K. C. Kresge, of Socony Mobil Oil Co. Inc. told the SAE meeting. They outlined the results of experiments, in this country and in Europe, this way:

- For piston cleanliness, metallic detergent additives are needed—containing, for example, barium or calcium. It is the chemical structure of the detergent, rather than the type of metallic base used, that is of primary importance, they said.
- To control spark plug fouling and to avoid exhaust-port blockage, the choice of the correct detergent is the predominant factor; some additives can do more harm than good.
- To reduce engine wear, the presence of bright stock in the lube oil distillate has considerable importance. A good antiwear additive and a rust inhibitor are also of considerable value in lengthening the life of a two-cycle engine.

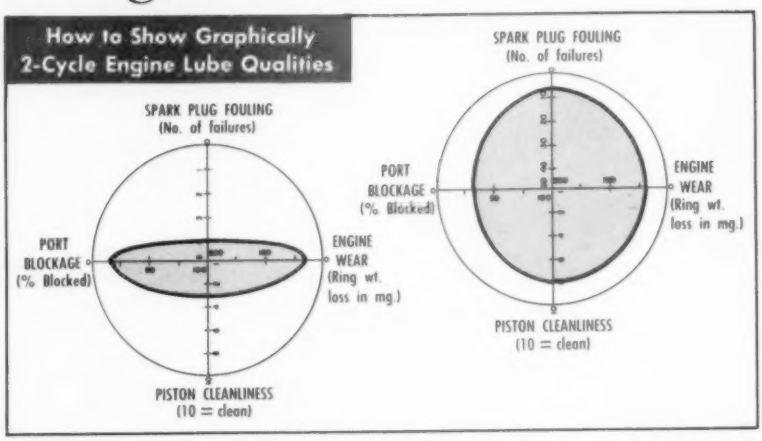
While the influence of various base oils and additives on each performance characteristic of a lube oil has been fairly well determined, much work remains to be done to combine each optimum factor into one good lubricant.

To make things more difficult, new and larger engine designs and additional requirements continue to present new challenges. For example, the Socony technicians had to study the problem of pre-ignition in large outboard engines when leaded gasoline is used. This should be controlled, they decided, by a modification in the lubricant, rather than by the use of a special nonleaded gasoline, which is seldom available, even at waterfront service stations.

The use of an ashless detergent additive in a high-viscosity base stock may be the best approach, R. W. Burchell and L. O. Bowman, of California Research Co., told the SAE meeting.

This type of combination, using 3% to 5% of ashless additive, has the advantage of eliminating the wear by abrasion caused by the ash particles in the conventional metallic detergents, as well as the tendency to form carbon deposits.

Tests were conducted, first in the laboratory, then in the field, An air-cooled scooter engine was used for full-throttle, full-load conditions, and outboard motors ranging in power from 7.5 to 35 hp. were used for moderate conditions and cold-tem-



RATINGS of two different lubricating oil samples are shown on charts developed by Atlantic Refining Co. At left, a very poor sample; at right, a reasonably good lube. The better the lube, the closer its profile approaches the circumference.

Seeing is believing . . .

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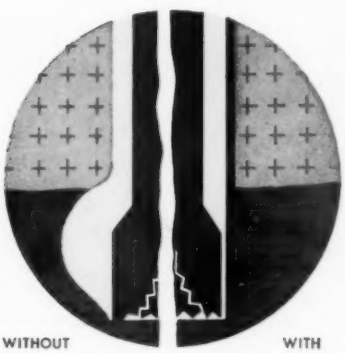

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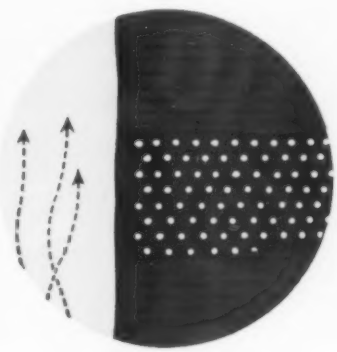

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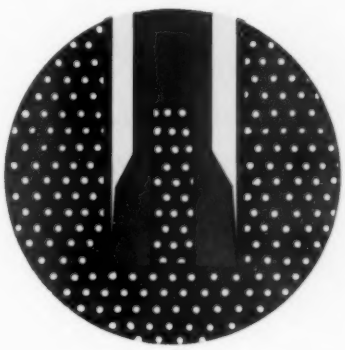

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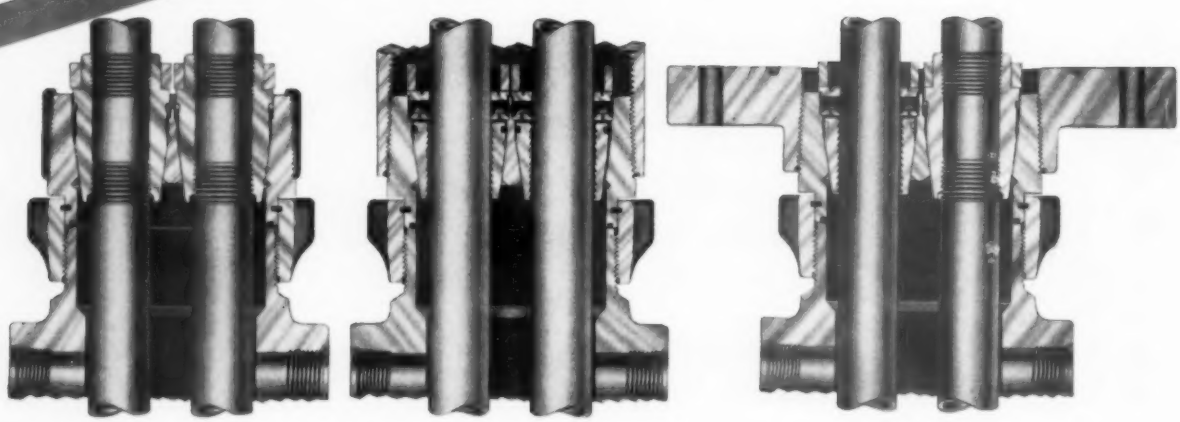

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perature operation. Eight chain-saws, applied to normal tree-felling operations, were also studied; in this type of engine, the proportion of oil to fuel is higher than 5%. Regular leaded gasoline was used in each test.

It was found, the California Research technicians said, that ashless detergent oil not only provided good deposition control, and reduced spark plug fouling, ring sticking, port blocking, and piston scoring, but also possessed excellent rust-protection qualities.

Better Earnings With New Units

How can a small company improve its earnings despite depressed petroleum prices? Clark Oil & Refining Co. did it by adding new refinery units of increased efficiency, thus getting higher yields of high-octane gasoline, according to Emory T. Clark, its president.

The Clark refinery at Blue Island, Ill., a Chicago suburb, had a capacity of 21,000 b/d. It consisted of a crude still, a platformer, a Houdry cat cracker, a gas separation plant, and a polymerization unit.

With the installation of three new units, Clark has been able to increase its production to 32,000 b/d, and its gasoline yield from 48% to 60%, says John Crawford, vice-president and refinery manager.

None of the new units is of unusual design. The expansion consisted of a vacuum section added to the crude still; a fluid catalytic cracker, to combine with the Houdry cracker; and an HF alkylation unit.

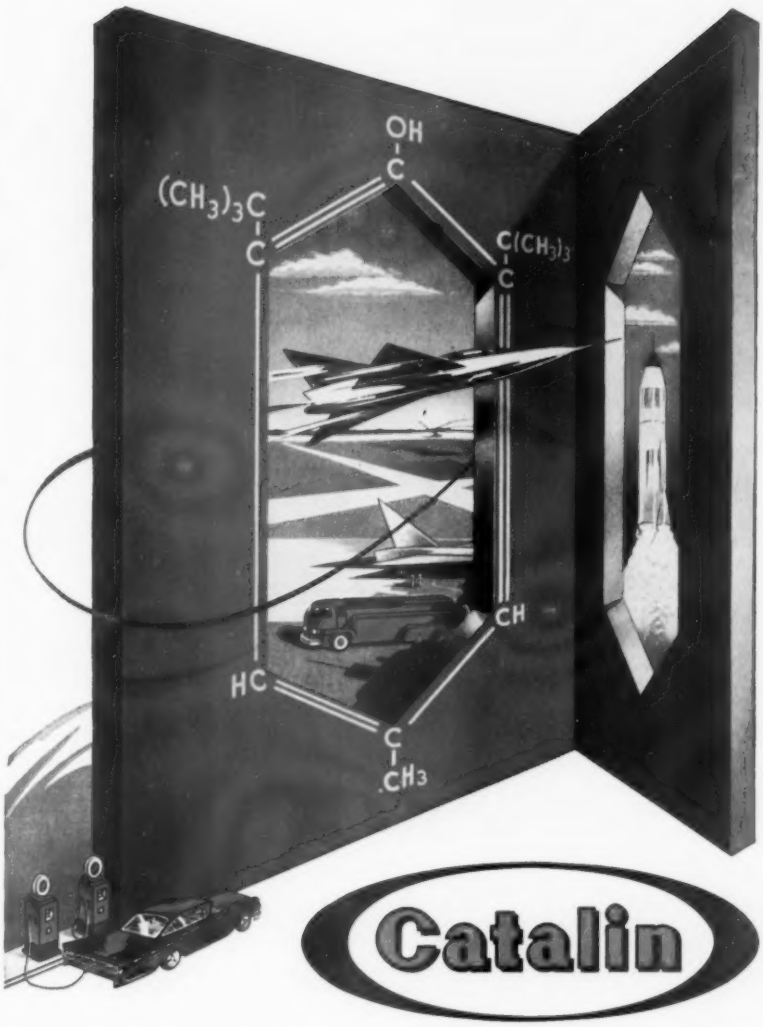
The fluid cat cracking unit was engineered and built by Procon, Inc., a subsidiary of Universal Oil Products Co.; the alkylation unit was engineered and built by Morrison Construction Co., of Hammond, Ind.

The alkylation unit is one of the few constructed for motor gasoline; such units are generally used to make aviation gasoline. Clark uses its very-high-octane alkylate as a blending stock for its only grade of motor gasoline, Clark Super 100.

The vacuum unit made possible a new level of quality control over asphalt, which is an important part of Clark's business.

The new units also improved the handling and recovering of the light ends, says Clark.

For the first quarter of 1959, with all new units in operation, sales of Clark products increased 19%, and earnings improved substantially.



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Catalin ANTIOXIDANT CAO-1 stabilizes high-octane automotive gasolines, as well as turbine, insulating, hydraulic and transformer oils . . . in fact, nearly any petroleum hydrocarbon exposed to oxidizing conditions.

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Painting foreman at large
East Coast shipyard says:

"We've tried lots of coatings: none equals Bitumastic for salt-water exposure"

This yard, one of the largest on the Eastern Seaboard, first tried a Bitumastic coating system for the protection of floating dry-dock wing-walls in 1957. The excellent performance of the coatings—and the firm's evaluation of competitive materials—led to the specification of the same system for the yard's newest dock. The two docks, old and new, are shown at left and right in the above illustration.

The yard's painting foreman notes that the two-year old Bitumastic coating system, with a total thickness of 60 mils, has been unaffected by constant wetting and drying cycles under salt-water exposure. Minor mechanical damage will not require touch-up for another two years.

Do you have a salt water corrosion problem on dockside facilities, off-shore rigs or production equipment in swampy ground? If so, it's likely that Bitumastic coatings can help you reduce corrosion costs. The coupon will bring you more information . . . or the personal attention of the Koppers representative or authorized Bitumastic industrial distributor near you. Koppers Company, Inc., Tar Products Division, Pittsburgh 19, Pennsylvania. In Canada, Koppers Products, Ltd., Toronto.

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What's New / IN PROCESSING

Continental Oil Co. plans to construct an 11,000 b/d catalytic reforming unit at its Lake Charles (La.) refinery. Cost of the project is estimated at $3-million.

Last week the company's subsidiary, Continental Carbon Co., announced plans for an expansion program at its carbon black plant, also at Lake Charles. Some $2-million will be invested to raise the plant's annual capacity to 75-million lb.

Bechtel Corp. has been awarded the contract to construct the reforming equipment; Fish Engineering Co., of Houston, will handle the carbon black project. Both programs are expected to be completed this year.

•

Phillips Chemical Co., wholly owned subsidiary of Phillips Petroleum Co. will boost ethylene capacity at its Sweeney (Tex.) plant by 75-million lb. per year. The expansion, to be completed this year, will bring the total plant capacity to 255-million lb.

Butane and propane raw materials for the ethylene plant are supplied from the company's adjacent refinery and natural gas liquids processing facilities.

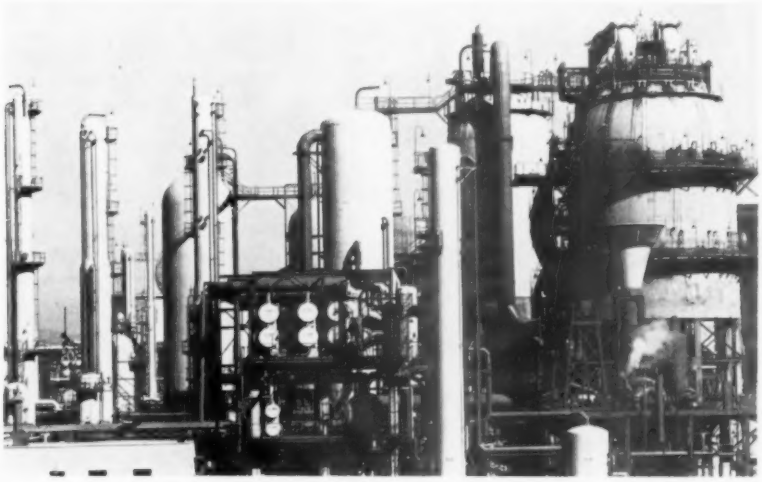
A specialty fractionating unit is now on stream at Humble Oil & Refining Co.'s Baytown (Tex.) refinery. The new unit will be used in petrochemical test operations to produce semi-commercial quantities of high-purity chemicals for potential customers. Major features of the installation include four fractionating towers, each 112 ft. high, four feed and product tanks, and two furnaces. Olefins, diolefins, aromatics, and paraffins will be processed.

Another addition to the refinery, a polypropylene unit, is currently under construction. It will have an initial capacity of 40-million lb. per year.

•

Engineering

A new outboard motor oil, designed to meet the lubrication needs of high output, two-cycle engines (page 70), has been developed by Phillips Petroleum Co. The additive oil, tested with current model 35- and 40-hp. engines, is said to reduce spark-plug fouling, minimize ring sticking and piston varnish, and change combustion-chamber deposits into a dry flaky material that escapes with the exhaust.



Richmond Cracker 'Open for Business'

This 55,000 b/d catalytic cracking unit is now in operation at Standard Oil Co. of California's Richmond refinery. With its auxiliary units, it is designed to convert heavier petroleum stocks into motor and aviation fuels. Total cost was about $33-million, half of which was for the cracking unit, with the remainder going for construction of a sulfuric acid alkylation plant, an isomerization plant, and off-plot facilities.

Example of

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DEPT/International

Venezuela 'Wants In' on Liquid Methane

(A Report from Petroleum Week's Caracas Bureau)

CARACAS—Venezuela wants a share of oil company profits in transporting and marketing liquid methane, as a condition for setting up natural gas liquefying plants in Venezuela.

These terms were revealed in an oil policy statement to the Chamber of Deputies by Minister of Mines & Hydrocarbons Dr. Juan Perez Alfonzo.

New offers by Constock Liquid Methane Corp. and Hidrocarburos S. A. to set up liquid gas plants are being studied, Perez Alfonzo said. The original offers from the two U. S. groups had been rejected as "not satisfying the interests of the country."

The private offer by Constock is for a plant at Puerto La Cruz to liquefy gas supplied by Mobil Oil Co. de Venezuela from shut-in wells around Anaco.

Hidrocarburos S. A. has offered to build a plant north of Maracaibo. The company was set up by Texas Gas Transmission Corp.; Godfrey L. Cabot, Inc., Boston, natural gas and chemical producer; Oivind Lorentzen, Inc., shipping agents; Bennett, Osborn & Hall, Dallas finance company; Lazard Freres & Co.; New York investment firm; Carl M. Loeb, Rhoades, New York investment firm; and Anderson & Roberts, New York investment lawyers.

In addition, or as an alternative, the government itself may build plants to liquefy methane for export. A decision is still pending. But Perez Alfonzo said the government's forecast of gas production and utilization for 1962 includes 200-million cf/d for liquefied natural gas—a figure which could be raised.

The government has projected an average output of 3,047,000 b/d of crude for 1962, and 4-billion cf/d of gas. Of the latter, 44% will be reinjected, 15% burned as fuel by oil companies, 11% marketed, and the remaining 30% flared.

Another possible alternative is obligatory gas storage for future use.

The Venezuelan Petrochemical Institute is studying a project for a plant to produce butadiene and styrene at the rate of 20,00 to 40,000 tons annually. Under the past regime, the Institute had projects for five liquefied methane plants, costing an estimated $40-million each.

In the meantime, the government will study the legal aspects of possible government acquisition of gas that is now being flared.

Under terms of concessions, the government's royalty on gas is usually 1/6—the same proportion as for crude. If the companies cannot sell, reinject, or otherwise use their 5/6 share, they flare it. But if the government wants gas in addition to its royalty, it must buy it.

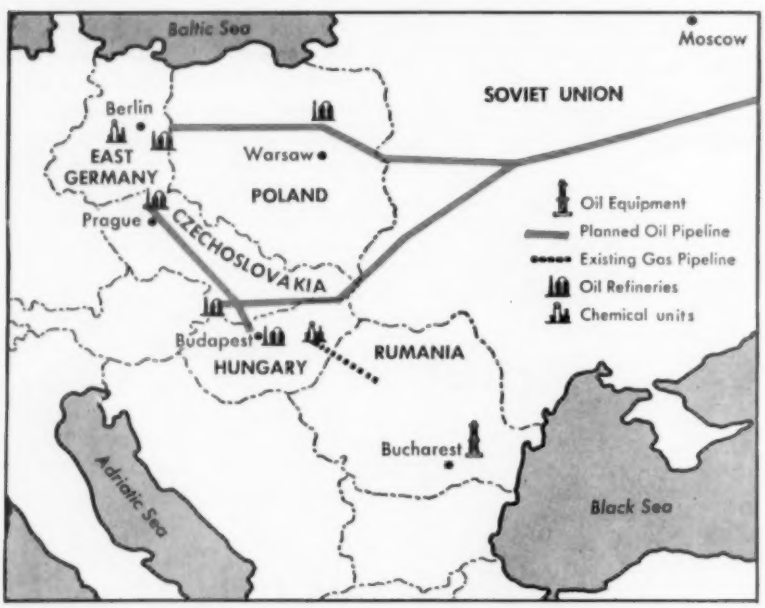
"It is inconceivable that gas is squandered and burned, and when the government wants to use it, it has to pay for it," Perez Alfonzo said.

At present, the Petrochemical Institute, which operates the government-owned pipelines, is paying 7.14¢ per Mcf. to companies at Anaco for treated gas at 1,000 psi. The price includes purchase of the 5/6 share of gas to which the companies are entitled, plus treatment and compression of the government's 1/6 share. Private pipeline operators purchase gas at prices varying from 5¢ per Mcf. for gas at 400 psi. to 14¢ for gas at 1,000 psi. It is sold to industrial users at around 22¢ per Mcf.

The government is also studying the possibility of ending certain exemptions from royalty payments on gas marketed or burned as fuel by the oil companies. These exemptions, originally granted as incentives for gas use, cover 2.7% of the gas burned as fuel by companies, and 2.6% of all gas sold by the companies—principally that sold to Vatcorp (Venezuelan Atlantic) and Evengas (Gulf, Creole, Shell, and International Petroleum).

Venezuela's gas policy, as outlined by the Minister of Mines & Hydrocarbons, may mean restrictions on production of crude where gas-oil ratios are high.

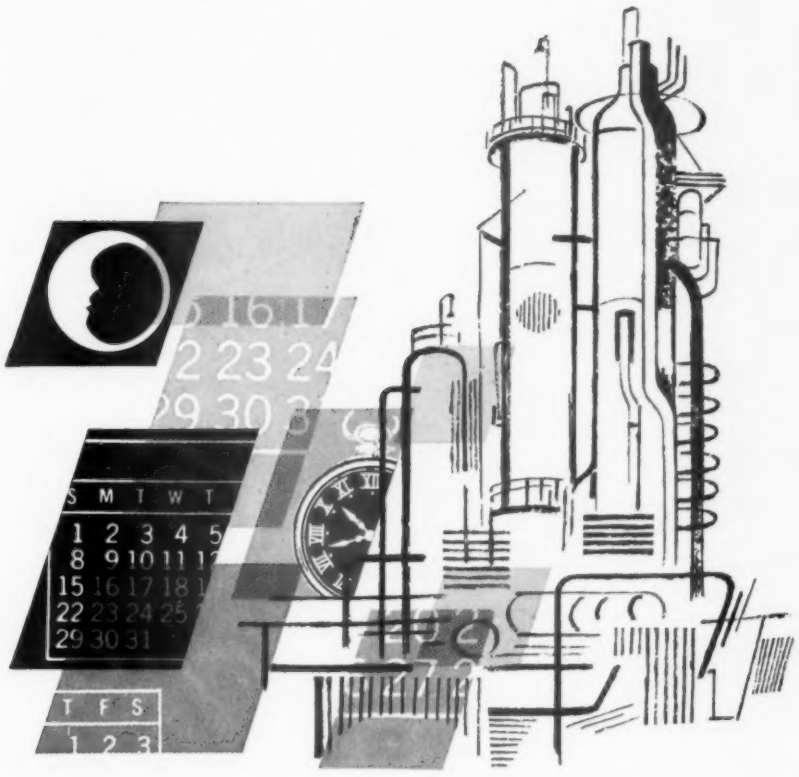
A general program of conservation



Work to Start Next Year on Satellite Line

The Soviets have now set 1960 as the starting date for construction of their 2,500-mi. crude export pipeline to their satellites in Eastern Europe, according to Radio Free Europe. 1965 is the target date for completion. Some preliminary work has already been done. According to an official map printed in Hungary, the pipeline will split into two sections in Byelorussia, with the northern branch serving Poland and East Germany and the southern serving Czechoslovakia and Hungary. The line reportedly will have a capacity of between 100,000 and 200,000 b/d. Pumping stations are scheduled every 62 mi.

intangibles were never so important



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WORLD-WIDE CONSTRUCTION FOR THE PETROLEUM, PETROCHEMICAL, AND CHEMICAL INDUSTRIES

of hydrocarbons, Perez Alfonzo says, will include selective control of crude production to concentrate operations in fields where the gas-oil ratio is lowest.

Virtually all of Venezuela's gas is associated with petroleum, making the problem of use and conservation more difficult. The waste of gas with each barrel of crude produced is one reason Perez Alfonzo insists he is not interested in expanding Venezuelan crude output at present.

The gas-oil ratio in Venezuela has been rising, to 1,171:1 last year. Along with every barrel of crude, Perez Alfonzo says, gas with a thermal equivalent of 1/5 bbl. of crude is produced. Of this, 44% is utilized and the remainder—equivalent to 1/9 bbl. of crude—is wasted.

By the end of 1958, 34 plants in Venezuela were reinjecting gas into 56 reservoirs at an average rate of 951-million cf/d for purposes of storage and pressure maintenance. The plants cost about $114-million. Crude reserves in place in these reservoirs total an estimated 17.3-billion bbl. Additional recovery of crude through gas injection is estimated at 897-million bbl.

The three biggest plants—Creole's Tia Juana units in Lake Maracaibo—will boost ultimate crude recovery by 695-million bbl. from ten reservoirs with a total of 8.5-billion bbl. of crude in place.

Another three injection plants with a combined capacity of 169-million cf/d are under construction, and 23, with a combined capacity of 720-million cf/d, are planned.

A government monopoly of gas transport within the country is a possibility, in connection with a $435-million, 1,009-mi. gas pipeline construction program.

To substitute gas for liquid petroleum fuels in domestic consumption—and release more oil for export—Venezuela is building a network of pipelines ranging from 8 in. to 26 in. in diameter.

Some 320 mi. of line will carry gas for export or for use by export industries, such as iron ore reduction and manufacture of synthetic rubber.

Capacity of the system will be 950-million cf/d. The government's Anaco-Caracas-Moron pipeline system, already built at a cost of $44-million, has 331 mi. of pipeline, ranging from 12 in. to 26 in. Its capacity is 220-million cf/d.

In addition, existing private lines totaling 461 mi. have a combined capacity of 182-million cf/d. The lines are owned by Vatcorp, Shell, and Evengas. Perez Alfonzo says the companies have offered to sell their lines to the government, but that they may make better offers after the government pipelines are built.

The government is budgeting $19.5-million this year for a 100-mi. pipeline from Moron to Barquisimeto, and may start work on a smaller 55-mi. gas line, costing around $3.6-million, from Casigua to La Fria, southwest of Lake Maracaibo.

Venezuelan gas reserves currently total an estimated 33-trillion cu. ft., or 7.5% of the world total. Thermal equivalent of Venezuelan gas reserves is calculated at 5.9 billion bbl. of crude, equal to more than ⅓ of the country's crude reserves of 16.5-billion bbl.

Gas production last year was about 3-billion cf/d, of which 901-million cf/d was reinjected and 430-million cf/d burned as fuel by oil companies or marketed. The remaining 1.7-billion cf/d was flared.

The importance of a new look at gas policy, the oil minister said, is pointed up by the fact that Venezuela every day wastes gas equivalent to 300,000 bbl. of crude—more than the entire oil output of Mexico.

Volume of gas flared or discharged in the air is twice as great as the gas consumption of England, he said.

Gulf Oil Enters Spanish Oil Hunt

MADRID—Gulf Oil Corp. has become the first U. S. major to join the oil hunt in Spain in partnership with a private Spanish company, Ciepsa (Cie. de Investigacion y Explotacion de Petrolco, S. A.).

According to a Ciepsa spokesman here, Gulf will participate in operations on a "promising' 14.8-million-acre Ciepsa tract in northern Spain. This area is the most heavily leased in Spain today. Gulf's investment is reportedly $15-million.

The two companies will apply jointly for tracts in the Spanish Sahara and Spanish Guinea, according to the spokesman.

Seventeen U. S. firms are reportedly interested in exploring Spain and its overseas areas. And more partnerships with Spanish companies are expected.

Egypt Steps Up Crude Exports

CAIRO—Egypt is stepping up exports of its Sinai crude despite the oil's high salt content. It exported 22,000 b/d to Italy last year, according to Radio Cairo.

The radio quoted Industry Minister Aziz Sidki as saying that the largest shipment of Egyptian crude ever exported had just been made to Italy, under the terms of a new trade agreement.

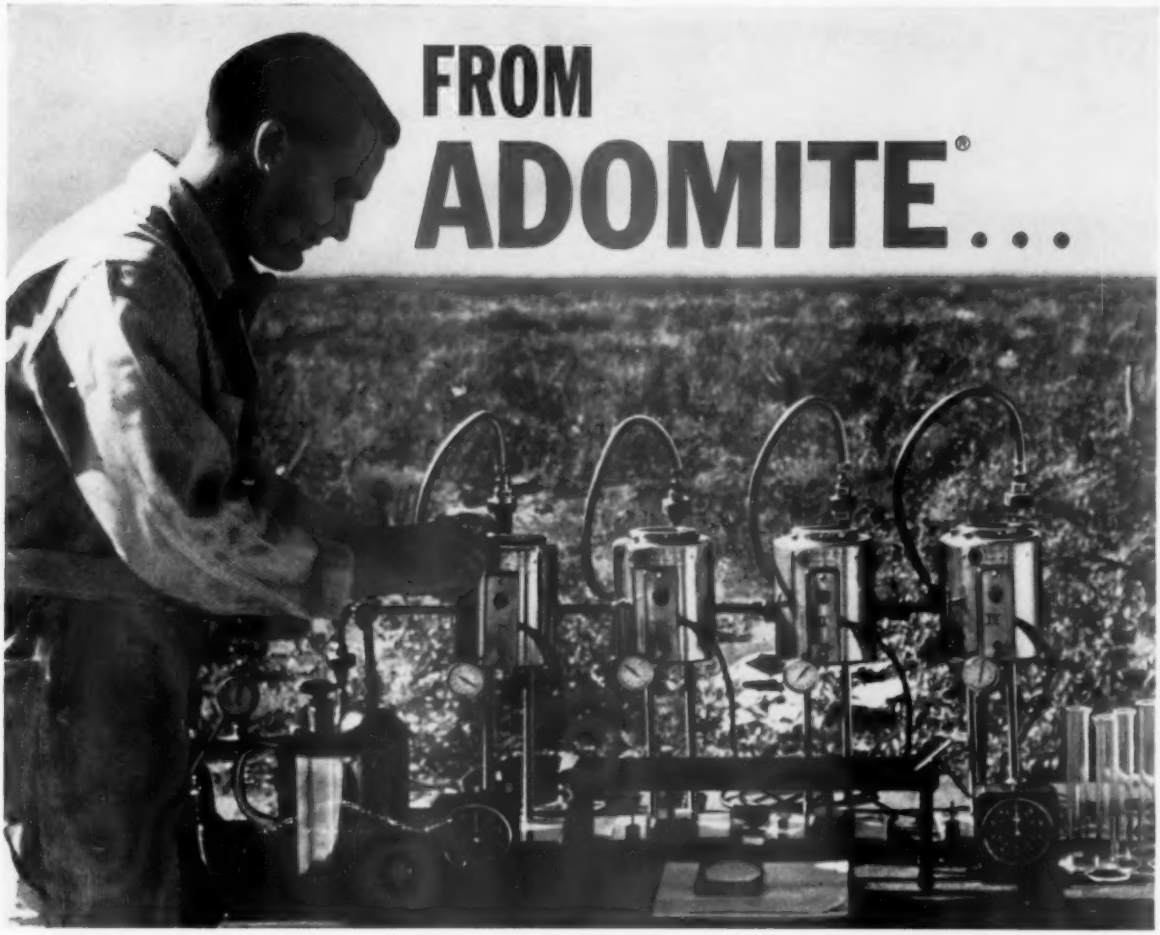
He said the big shipment was due to the "steadily increasing output of the oil fields in the region" by Eastern Petroleum Co., owned 49% by the government and the rest mainly by Belgium's Petrofina and Italy's Agip Mineraria.

Egypt has also agreed to supply 1-million metric tons (about 20,000 b/d) of crude to Yugoslavia—if and when it produces enough crude to deliver. The first shipment of 40,000 metric tons is expected in a few weeks, and will be run at the Boris Kidric refinery, at Rijeka. A $16-million modernization program will enable the plant to take more and more Egyptian crude, at a rate comparable to the slated rise in Egypt's crude output.

This agreement is the result of an attempt by Yugoslavia to defeat Rumania's attempt to pressure the country into buying more Rumanian oil products.

Move to Denationalize Defeated In Chile

SANTIAGO—The proposal to denationalize Chile's oil exploration and development and to open four northern provinces to foreign oil companies (PW—Jul.3'59,p38) was rejected this week by a vote of 61-32 in the House of Representatives. This was due to the solid opposition of the Radicals, Chile's largest party. A bill was passed to allot more funds to the state oil agency, ENAP, for exploration in northern Chile. New proposals at this time are not considered likely.



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What's New / AROUND THE WORLD

First Commercial Oil On Trucial Coast?

ABU DHABI—The Trucial Coast's first commercial oil discovery may have been established here by the No. 2 Murban drilled by an Iraq Petroleum Co. affiliate (PW—May15 59,p166). The wildcat produced 2,000 b/d in a brief test of two separate zones, apparently within 50-ft. intervals. The test is at Tarif, 5 mi. south of the No. 1 Murban, which was drilled in 1953. It produced at the rate of 1,500 b/d, but ran into mechanical difficulties, and failed to test any oil when reopened.

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NICARAGUA—Esso Standard has proposed an $8-million, 10,000 b/d refinery at Corinto, a big port on the west coast.

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BRAZIL—The government's Petrobras is hoping that some new oil finds along Brazil's eastern coast will double its present 500-million bbl. oil reserves.

Two new wells in Alagoas are producing about 200 b/d from 5,580 ft., and three others about 50 b/d from the same depth. In Bahia, three new wells are producing about 600 b/d. Petrobras says at least 10 or 12 offsets will be drilled.

•

SAN SALVADOR—An $8-million refinery, the country's first, has been O.K.'d by the government. The unit will probably be built near the seaport of La Union by an unidentified group. President Jose Maria Lemus announced the unit would import crude, probably from Venezuela or Peru. He also said another group was interested in building a second refinery, near Acajutla.

•

VENEZUELA—Creole Petroleum is turning back its Block 5 concession in northern Monagas state after drilling 11 dry holes, ranging up to 13,000 ft. in depth. Creole paid $15.2-million bonus in 1957 for the 74,000-acre block. And San Jacinto has renounced a 24,000-acre concession in Apure state, near the Colombian border.

•

IRAN—About 41% of Iran's oil exports went to Europe, 22% to the Far East, 21% to Africa, 11% to the Arabian Peninsula, 4% to the U.S., and 1% to other areas, according to Iranian customs figures for the year ended March, 1958.

•

ITALY—The Soviets supplied over 20,270 b/d of Italy's total 1958 crude imports of about 447,940 b/d, and half of Italy's residual fuel oil imports of 4,000 b/d. Another 13,860 b/d of crude came from Venezuela, and about 400,000 b/d—from the Middle East.

•

LEBANON—Venezuela will participate in the second Arab Petroleum Conference, due to be held in Lebanon in 1960, according to Muhammad Salman, director of the Arab League department of oil affairs. He said contacts were continuing between Venezuela and the Arab League.

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BOLIVIA—An affiliate of Fish Engineering Corp. has signed contracts for sale of oil and gas to the Argentine state enterprise Dinie (Direccion Nacional de Industrias del Estado). Bolivian Oil Co. is now operating three rigs on its concession, which hugs the border of Argentina, covering the extension of that country's Madrejones field into Bolivia.

•

VENEZUELA—Stekoll Petroleum, Dallas, will drill at least eight wells on a farmout from Venezuelan Atlantic and Pancoastal Petroleum, totaling about 27,000 acres in eastern Venezuela. The properties adjoin two producing fields and include three old wells that were tested but never put on production.

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Cooperation between Mexico and the Middle East oil producing and transit countries is being sought by an official Mexican delegation. The group, headed by Antonio J. Bermudez, former chief of the state oil agency, Petroleos Mexicanos, has visited Saudi Arabia, Kuwait, Bahrein, Qatar, Iran, and the United Arab Republic.

•

INDIA—The Russians are urging India to import Soviet oil, following the announcement of India's establishment of a state oil marketing company (PW—Jun.19'59,p81).

•

Mideast Oil Revenues Hit $1.3-Billion

Oil revenues paid to the major oil-producing countries of the Middle East jumped in 1958 to $1,270,000,000. The United Nations gives the following preliminary estimates: Barhrain, $6-million; Iran $246-million; Iraq, $237-million; Kuwait, $415-million; Qatar, $60-million, and Saudi Arabia, $304-million. In addition, Middle East oil transit states got $89-million in royalties in 1958.

Wildcats

GUATEMALA—Ohio Oil says it has had no interesting oil shows so far in its first wildcat here. The Chinaja test is now being drilled below 8,800 ft. after the firm took three cores and made one drillstem test.

LIBYA—Jersey Standard is now drilling a stepout about 4 mi. southwest of its 17,500 b/d Zelten discovery (PW—Jun.19'59,p11). At last reports, it was below 2,100 ft.

SOMALILAND—Encouraged by oil shows in its first African wildcat, Standard-Vacuum is now drilling below 2,200 ft. in its No. 2 Dagah Shabell. No. 1 was abandoned at 4,500 ft., about 1 mi. to the north.

ARGENTINA—Union Oil of California will start its first exploratory well in the Comodoro Rivadavia area when its equipment—now en route—arrives.

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DEPT/Marketing

Bigger Role Seen for Aluminum Cans

Aluminum oil cans are gaining favor among oil companies and oil can manufacturers.

First introduced in 1957 (PW—Sep.27'57,p57), the aluminum oil can is catching on fast. Robert Hollister, of American Can Co.'s product marketing division, predicted last week that 75-million one-quart aluminum oil cans will be manufactured this year—three times the 25-million that were made in 1958.

Despite this expansion, aluminum still has plenty of room for growth in the oil can market. Hollister estimates that 1.8-billion one-quart oil cans will be manufactured this year.

Mobil Oil Co., which began experimenting with aluminum cans this spring, says that the new cans are producing savings in outgoing freight and in lithographing.

The 8% lighter weight of a full aluminum oil can compared to steel cans offers worthwhile savings in large shipments, Mobil says. Furthermore, aluminum cans can be lithographed more easily than steel cans, and certain special color effects can be achieved.

Esso Standard Oil Co., which introduced aluminum cans in 1957, says they are "here to stay." Several other oil companies have recently begun packaging lubes in aluminum.

A spokesman in Esso's purchasing department told PETROLEUM WEEK last week that Esso has renewed its contract with Reynolds Metals Co. for the second year, and most likely will extend the contract beyond its termination date at the end of this year. Through the agreement, Reynolds bills Esso directly (at a price "very competitive" with steel cans, says Esso), but permits Esso to select the can manufacturer.

A can company spokesman says that Esso, and many other oil companies that have tried aluminum, including Union Oil Co., DX Sunray Oil Co., and Phillips Petroleum Co., are considering the use of aluminum exclusively in all their one-quart oil cans—if current tests of the new cans prove completely satisfactory.

Aluminum cans are one of the few significant modifications of oil packaging since the steel can was introduced more than 25 years ago.

In addition to the savings in shipping and lithographing, the scrap value of aluminum cans represents potential savings to dealers, who are able to sell them locally or apply them toward the cost of refuse disposal.

Another advantage of the aluminum cans is the ease with which they are opened. Furthermore, dealers have found that the aluminum cans do not rust when exposed to the weather.

Despite these advantages, can makers are still hesitant about two aspects of aluminum cans: durability and price.

Although many oil companies have used the aluminum cans successfully, W. E. Neuman, manager of the new products division at Continental Can Co., told PETROLEUM WEEK that aluminum still must be tested in all types of distribution before marketers will fully know its capabilities. Aluminum cans, says Neuman, are "more susceptible to denting or to physical damage" than steel cans.

In addition to durability, can makers say that it is up to the aluminum producers to keep the price of aluminum competitive with steel.

At the moment, a spokesman for one can company notes, aluminum is in a state of oversupply, and aluminum companies have been developing the oil can market (in addition to other markets) to siphon off some of the excess.

Before the advent of aluminum, can manufacturers had been diligently experimenting with other materials to substitute for steel.

The problem was mainly one of high-speed production, rather than of quality. "I know of no material that cannot hold motor oil," Neuman has said. But most nonmetals cannot be fashioned into containers at the rate of 350 a minute, which is required to satisfy oil packages.

All metals other than steel and aluminum have thus far proven too costly for oil can production.

At the recent Petroleum Packaging Exposition, in Los Angeles, Fibreboard Paper Products Corp. presented a paper-and-foil container as "the answer to the automatic packaging of oil in the one-quart size."

According to Chuck Triol, of Fibreboard, "The Fibrematic carton essentially is a modified seal-end carton with an attached heat-sealable, flexible inner liner which is an integral component of the carton."

Fibreboard says its "oil-resistant" rectangular carton offers savings in weight, storing space, packaging, handling, and basic price. Although the price of the Fibrematic has not been finalized, "a safe guess is about 4¢ per unit." (Aluminum oil cans cost about 5¢ per unit.)

'Gas' Pumps Pull Out of Slump

Gasoline pump shipments are staging a comeback after last year's recession—their worst since World War II.

Since February of this year, when shipments were still running parallel to last year's depressed level, shipments of gasoline pumps have begun to revive. In March, pump shipments were 0.5% over the same month in 1958. In April, approximately the same improvement was shown. But in May, the shipments of pumps scored a 4½% gain over 1958.

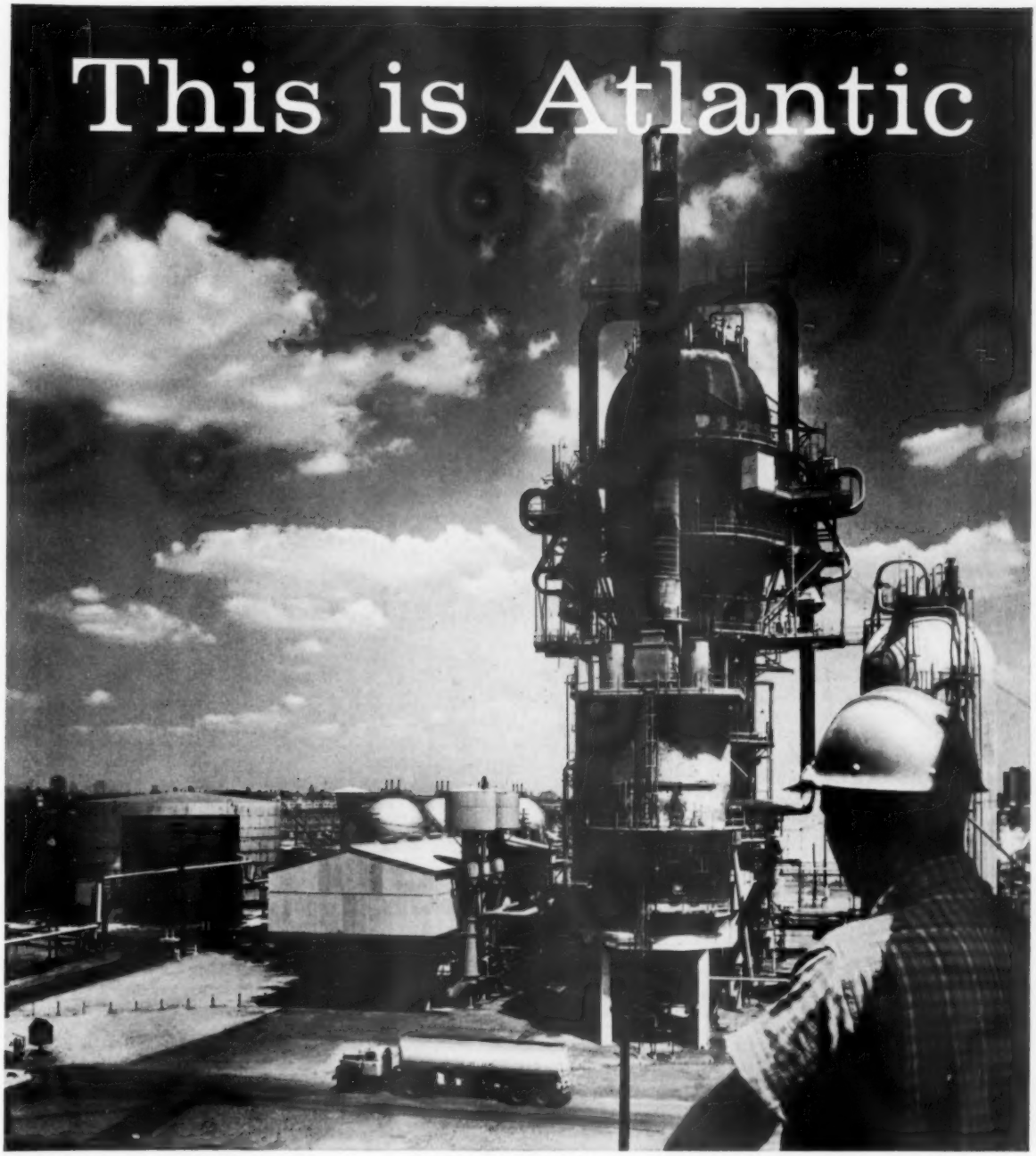
The recent upswing in pump shipments is still not a sign that oil companies are vigorously expanding their retail outlets.

If the present trend of pump shipments continues, the annual total will still fall far short of the 100,000 pumps that are considered "normal." A spokesman for the pump industry told PETROLEUM WEEK last week that this year pump shipments will run between 75,000 and 80,000. This will be only a slight gain over the 70,551 that were sold last year (PW—Apr.3'59,p70). From 1954 to 1957, the pump makers sold more than 100,000 a year.

The oil industry, apparently, is still holding back on marketing expansion—despite survey findings earlier this year that marketers would spend 16% more than last year on modernization and expansion.

A spokesman for the pump makers says that the stimuli of multiblending and the third grade of gasoline have apparently run their course. "The oil companies seem to have most of the new types of pumps they need, and are just drawing on their inventories," he says. He sees the recent improvement in pump shipments merely as an indication that oil companies are replenishing their stocks.

This is Atlantic



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Fair Trade Nears Vote in Congress

Oil marketers were watching a Senate Commerce subcommittee this week to get what may be their last glimpse of opinion on federal fair trade before the issue goes to the floor of both houses for a vote.

The Senate subcommittee has scheduled a half day of hearings on July 10, primarily to hear Sen. Hubert H. Humphrey (D., Minn.) support the bill. Some Washington observers expect that Humphrey's testimony will bring the hearings to a close. But others expect more witnesses to testify.

Otis H. Ellis, general counsel of the National Oil Jobbers Association, has expressed a desire to testify later this month. If he gets a chance, Ellis will express NOJC's opposition to federal fair trade.

Both Senate and House versions of the federal fair trade bill would prohibit branded retailers from selling or advertising brand-name products at prices that are lower than fair trade prices—even if they haven't agreed to accept the fair trade prices (PW—Apr.17'59,p62).

Supporters of federal fair trade hope to get House and Senate action during this session of Congress.

The House Rules Committee will probably consider the bill this week. It's expected to reach the House floor about the first week in August, where supporters expect a two-to-one majority to pass the bill.

If they get that big a majority in the House, supporters say, federal fair trade will be hard to block in the Senate. But the obstacle of a presidential veto still remains a great possibility, since the Justice Dept., the Commerce Dept., and the Federal Trade Commission have all expressed their disapproval of the measure.

Oil marketers will be watching the fate of the amendments suggested by Atlantic Refining Co., which pin federal fair trade specifically to gasoline service stations.

Atlantic is mainly concerned with the commercial account problem, which has prevented Esso Standard Oil Co. from fair trading in Massachusetts.

At the two-day hearings of the Senate committee in June, Atlantic suggested that a gasoline supplier should be able to fair trade at retail without having to give up his direct sales to commercial accounts, which may be in competition with his own retailers.

Atlantic says that retailers would "gain nothing" by having suppliers give up commercial accounts, since these accounts would not go to the retailers but would only seek another supplier.

The only comment on Atlantic's amendments at the June hearings was by John Dressler, executive secretary of the New Jersey Gasoline Retailers Assn. He said, in passing, that he favored the amendments.

One supporter has said that fair trade prevents oil marketing from becoming a monopoly. Dressler testified that "there will be no private enterprise as far as retail gasoline stations are concerned" if fair trading "breaks down." Dressler was speaking of the conditions in New Jersey.

When asked by Sen. Vance Hartke (D., Ind.) what would happen if federal fair trade passes but oil suppliers do not adopt fair trade, Dressler said, "We'd have to come to the government for a tighter form of control."

Dressler said that he doesn't want "uniform price," but insisted that fair trade is an excellent way to give the retailer more assurance of a profit on the products he sells.

Sen. Strom Thurmond (D., S.C.), chairman of the subcommittee, several times during the hearings wondered why businessmen want the federal government coming around to look at their books. He feels that, since FTC will probably have to enforce federal fair trade, the government will have to check up on oil marketers. He said that this can only lead to investigation of income tax returns, and probably to income tax suits.

What's New / IN MARKETING

A suggestion that API's Marketing Division study the turnover of dealer employees as well as turnover of the dealers themselves was made last month by station dealers at the Los Angeles regional meeting of the division's service station advisory committee. API's two-year study of dealer turnover will continue through 1959.

The Los Angeles dealers also urged that suppliers recognize the need for:

- More storage and motor tune-up space in modern stations.
- More individuality and "eye-appeal" in station design and landscaping.
- Encouraging high schools and junior colleges to prepare enterprising young men for service station careers through distributive education.
- Upgrading dealer training programs by increased emphasis on finance.

•

The Wyoming campaign against trading stamps suffered a set-back last week. Earlier this year, the Wyoming legislature set July 1 as the start of the state's antitrading-stamp law. But last week, Judge Allen Pearson, of Cheyenne, permitted four trading-stamp companies to continue their operations in Laramie County. Pearson granted an injunction to the companies prohibiting Laramie County officials from enforcing the new law. County officials are expected to appeal to the state supreme court.

•

Teamsters Local 614 is organizing a drive among gas service attendants in Detroit. First on the list are the attendants at Standard Oil Co. (Ind.) stations. Announcement of the teamsters' drive came after the members of the Michigan Gasoline Attendants Union, an independent union, recently voted to affiliate with the Teamsters.

•

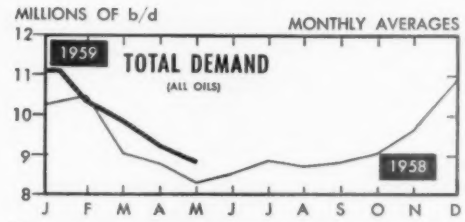
Gasoline octane ratings inched up slightly last month, according to Ethyl Corp. Premium, at 99.1-octane, was up 0.6 over June, 1958, and unchanged from May, 1959. Regular was up 0.7 over June, 1958, at 91.9-octane, a gain of 0.1 over May, 1959.

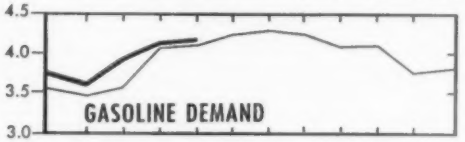
•

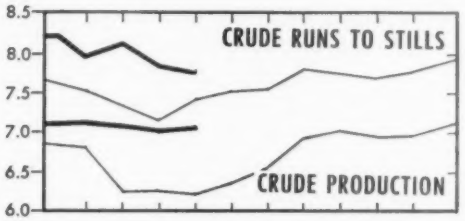
Last week another major oil company began fair trading in North Carolina. Effective July 1, Sinclair Refining Co. set fair trade minimums on its products. Sinclair follows three other companies that have already begun fair trading in the state: Gulf Oil Corp., Esso Standard Oil Co., and American Oil Co.

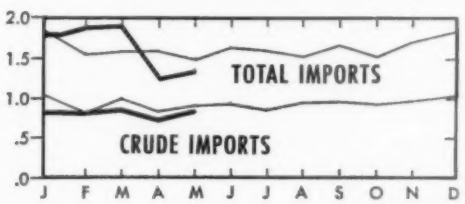
PETROLEUM WEEK'S

Fingertip Figures









Figures for period ended July 3, except as noted

RUNS TO STILLS

Latest week	7.936
Previous week	7.836
Year ago	7.461

CRUDE PRODUCTION

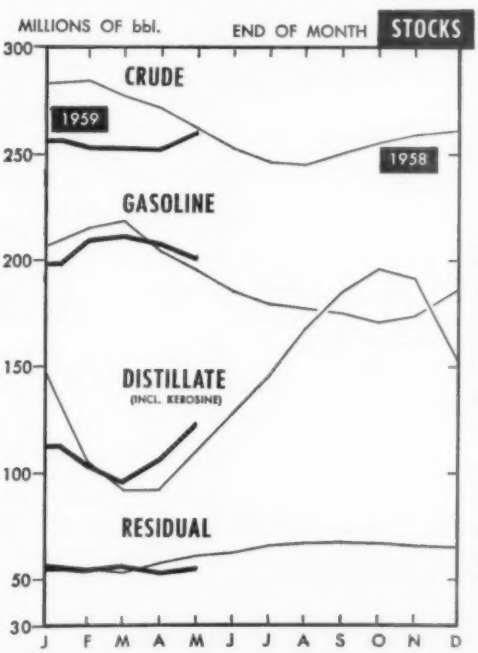
Latest week	6.913
Previous week	7.025
Year ago	6.424

TOTAL IMPORTS

Latest week	1.991
Previous week	1.648
Year ago	1.679

CRUDE IMPORTS

Latest week	1.473
Previous week	1.216
Year ago	1.046



CRUDE STOCKS

Week ended 6-27	270.4
Previous week	265.7
Year ago	256.2

GASOLINE

Latest week	195.0
Previous week	198.3
Year ago	183.4

DISTILLATES

Latest week	148.7
Previous week	143.2
Year ago	131.0

RESIDUAL

Latest week	54.4
Previous year	53.8
Year ago	64.8

Supply-Demand Figures for June

(millions of b/d)

	June 1959	% Change from year ago	6 Months 1959	% Change from year ago
Total Demand (Inc. Exports)	9.040	+ 6.2	9.855	+ 6.6
Gasoline	4.433	+ 4.2	4.032	+ 5.2
Distillates (Inc. Kerosine)	1.360	+ 7.9	2.342	+ 2.8
Residual	1.447	+19.7	1.773	+16.3
Total Supply	9.459	+ 8.2	9.880	+11.5
Domestic Crude	7.007	+10.5	7.177	+11.0
Nat. Gas Liquids	.850	+14.2	.868	+11.2
Total Domestic	7.857	+10.9	8.045	+11.1
Crude Imports	1.133	+18.0	.934	— 0.5
Total Imports	1.602	— 3.4	1.835	+13.6

Supply and demand ran just about as expected in the first six months of the year—total demand was 6.6% over a year earlier, and total supply exceeded demand by 25,000 b/d.

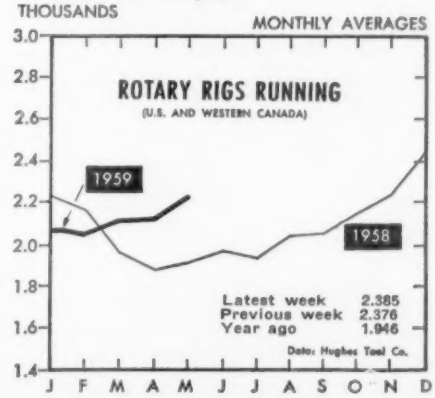
The most encouraging trend during the first half of the year was the sharp gain in residual fuel oil demand. The 16.3% increase for both domestic demand and total demand reflected the strong rate of industrial recovery in the nation.

The recovery was particularly noticeable in June, with residual demand running 19.7% over a year earlier.

The nature of the excess supply during the first half was of serious proportions, and will plague the industry well into the fourth quarter and possibly into the first quarter of 1960.

The 25,000 b/d excess of supply this year compared with a 389,000 b/d excess of demand over supply in the first half of 1958.

It means that domestic output will have to be held in close check during the remainder of the year.



The Market Trend

Public Oil Bids and Old Spanish Customs

U. S. oil men will get quite a jolt if they look into public bidding to supply oil to foreign governments. In this country, pretty much everything is out in the open—prices, quantities, supply periods, and names of contracting companies.

There is a stone wall of no-information abroad. A check with a dozen countries in Europe shows that public agencies just don't talk about what they pay for oil.

Apparently it's an Old World custom to keep oil prices under the heading of business secrets. In the Netherlands, for example, it's clearly impossible to find out details of government oil purchases. There's a law against it—Royal Decree No. 21, dated Mar. 28, 1949. Elsewhere in Europe, other nations appear to have a self-imposed lid on their oil purchasing affairs.

A typical example of governmental reticence on oil purchases came last week when the British Admiralty came in the market for a big slug of Navy Special fuel oil. The Admiralty doesn't mind saying that it buys more than 1-million tons of oil a year. The Admiralty also concedes that it buys mostly in bulk in the Persian Gulf and the Caribbean. On one point, however, the men in blue are firm: They don't talk about prices.

Checks on public agency oil buying come up with the same negative result in Denmark, Spain, Portugal, West Germany, and Italy. The West German method of oil buying is most interesting: The government invites "public" bids, but then assures the oil companies that the tenders will be kept secret. The bidders don't even find out who their competition is. Nor does the winner of a public bid ever know how much money he left on the table.

When a Petroleum Week reporter showed up asking questions about oil buying in Italy's Transport Office, two officials bugged out in a hurry, saying only that they would be back in two days. In Denmark, a purchasing official unbent sufficiently to allow that the government normally buys on contracts ranging from three to four months. In Portugal, public bidding is quite subdued. In Spain, the petroleum market is controlled by a state-operated company.

You never know how the other half lives.

And Bids On No. 6 Fuel At Home:

In the U. S., bids to supply New York City with No. 6 fuel oil continue to be about as competitive as you can find. The City Transit Authority wanted 120,000 bbl. for delivery to its North River Power House (59th St.), and got a bid of $2.09 a bbl.

This price is right on the nose of the contract delivered cargo price most sellers charge for New York deliveries in tanker loads.

Big Ships Are 'Recognized':

The London Tanker Brokers Panel caught up with the times early this month, confirming earlier rumors. When the panel published its so-called "average freight rate assessment," it divided its rates into two categories—average-size tankers and large tankers.

With so many large tankers in operation nowadays, a T2 vessel no longer is a good yardstick for all oil shipping.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of July 6

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....11.625-13
- Gasoline, 92 oct reg....10.5-11.5
- **Kerosine....8.5↑-10.375**
- Heating oil, No. 2....8.125-9.875
- **Gas oil, 48-52 d.i....8.25↑-10.125**
- Fuel oil, bunker "C"....$2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130....15.25
- Gasoline, 93 oct research prem....10.75
- Gasoline, 87 oct research reg....9.875
- Gasoline, 79 oct research....9.125
- Gasoline, 70-72 oct motor method....9
- Kerosine....9
- Heating oil, No. 2....8.25
- Gas oil, 48-52, d.i....8.5
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- Kerosine....9.65-9.9
- Heating oil, No. 2....9.15-9.4
- Fuel oil, No. 6....$2.37

Okla-Group 3, northern shpt., bulk
- **Gasoline, 91 oct reg....11↓-11.75↓**
- Kerosine....9.75-10.25
- Heating oil, No. 2....8.75-9
- Fuel oil, No. 6....$1.60-1.80

Chicago, bulk
- Gasoline, 91 oct reg....11.5-11.75
- Heating oil, No. 2....9.5-10.85
- Fuel oil, No. 6 high sulfur....7.4-7.5

Los Angeles, rack
- Gasoline, 88 oct reg....12.5-12.65
- Diesel fuel, PS 200....8.5-11.25
- Light fuel, PS 300....$2.80
- Heavy fuel, PS 400....$2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....4
- Propane, Baton Rouge....4.625-5

Pennsylvania Lubes
- Bright stock, 25 p.t....22
- **200 vis. neutral, 25 p.t....21-23↑**

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent 95 v.i....23-24
- Neutral, solvent, 200-210 vis....19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....24
- Neutral, solvent, 200 vis....20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130....16.5
- Gasoline, 79 oct research....9.75
- Kerosine....10.75
- Gas oil, 48 d.i. minimum....10.125

KEY PRICES—CRUDE OIL

(2¢ differential per deg., of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9....$2.77-2.97
- North Dakota, 36.0-36.9....2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N. M., inter., 36.0-36.9....2.93
  - West Texas, N. M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.25
  - Mirando, 28.0-28.9....3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....4.25
- California, Signal Hill, 21.0-21.9....2.50-2.54†
- North Louisiana-Arkansas, 36.0-36.9....2.77-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina....$2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.435
- Virden (Man.)....2.31

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido....$3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz....3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, Las Piedras....1.73-1.88
- Tarra, 38.0-38.9, San Lorenzo....2.83
- Lagunillas Heavy, flat, Cardon....2.10

†Differential per deg. of grav. varies.

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.89-1.90
- Safaniya, 27.0-27.9, Ras Tanura....1.50
- Iran, 34.0-34.9, Bandar Mashur....1.86-2.04
- Iran, 34.0-34.9, Abadan....1.81
- Iraq, 35.0-35.9, Fao....1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.67
- Qatar, 41.0-41.9, Umm Said....2.05
- Neutral Zone, Burghan, 23.5-24.4, Mina Saud....1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud....1.38

Middle East, Eastern Mediterranean
- Arabian, 34.0-34.9, Sidon....$2.27
- Iraqi, 36.0-36.9, Tripoli, Banias....2.31

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, flat....$2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean (USMC—15%) $2.42↑
U.S. Gulf-New York, dirty (USMC—27½%) $2.07↑
NWI-USNH, dirty....(USMC—60%) $1.10
NWI-UK/Cont., dirty....(Scale—30%) 22/9*
Persian Gulf-UK/Cont., dirty....(Scale—70%) 20/10*
Persian Gulf-USNH, dirty....(USMC—75%) $3.18

**Sterling.*

DEPT/Personals

F. C. NICHOLSON has been elected vice-president of Northern Natural Gas Co., Omaha, Neb. He is head of Northern's gas products development department, and vice-president of Helex Co., a Northern subsidiary. Nicholson joined Northern in 1958, after more than 20 years experience in chemistry and petroleum.

F. C. Nicholson

J. W. Pittman

J. W. PITTMAN has been appointed transport and materials manager in Shell Oil Co.'s New Orleans exploration and production area. He succeeds **K. W. Martin,** who was recently named manager of the newly created administrative services department, in New York. Pittman, with Shell since 1934, was most recently on special assignment for Shell in New Orleans. In his new position, he will supervise the company's purchasing-stores, oil shipping, crude, and transport activities.

FOUR NEW DIRECTORS have been appointed to the boards of four companies in the Royal Dutch Shell group. **J. C. G. Boot,** group personnel coordinator, and **A. S. C. Hulton,** regional coordinator for Africa and the Middle East, have been appointed directors of Shell International Petroleum Co. Ltd., London. **W. F. Mitchell,** director of coordination, chemicals, has been appointed to the boards of Shell International Chemical Co. Ltd., London, and of Bataafsche International Chemie Mij, N.V., in the Hague. **E. C. Peet,** group finance director, has been appointed a director of Bataafsche Petroleum Mij., N.V., the Hague. Peet is also a director of Shell Petroleum Co., Ltd., London. Shell International, the two chemical companies, and another company in the Hague, Bataafsche Internationale Petroleum Mij., N.V., have recently been set up under Shell Petroleum and Bataafsche Petroleum.

J. M. ROBERTS, area land agent for Shell Oil Co. in Houston, moves to the company's New Orleans area in a similar position. **W. W. Welch,** East Texas division land manager, will serve as Houston land agent until a permanent successor for Roberts can be selected. **W. R. Kemper,** Corpus Christi division land manager, moves to New York to undertake a special assignment on the company's head office exploration department staff. **E. R. Godbout,** area land agent in Midland, succeeds Kemper in the Corpus Christi division.

G. W. JACK is the new director of the administrative-patent-products division of American Oil Co.'s research and development department in Texas City. Jack, with Amoco since 1940, was most recently chief analytical research chemist in the analytical research section of that department. In his new position, he will be in charge of research on uses of new fuels and lubricants on automotive engines. Electronic data processing and administrative and patent activities will also be under his direction.

G. W. Jack

J. F. Drake

J. FRANK DRAKE has resigned as an active member of Gulf Oil Corp.'s board of directors. The board has designated him Director Emeritus, the first such title ever conferred by Gulf. Drake was president of Gulf from 1931 to 1948, chairman of its board from 1948 to 1953, and chairman of its executive committee from 1953 to 1955.

R. L. Lay

J. T. Froehlich

JOSEPH T. FROEHLICH and **ROY L. LAY** are the new general managers of the foreign operations department, Eastern Hemisphere, for Texaco Inc., with offices in New York. Froehlich, with Texaco since 1929, was named assistant superintendent of the West Tulsa Works in 1956. He became superintendent in charge of special assignments in the refining department in New York later that year. He has been superintendent of Texaco's refinery at Anacortes, Wash., since 1957. **Harold P. Creel,** formerly assistant superintendent for maintenance and construction at Texaco's Lockport (Ill.) Works, succeeds Froehlich at Anacortes. Lay was most recently assistant to the vice-president in charge of foreign operations, Eastern Hemisphere. Before that, he was assistant to the vice-president of Texaco's producing department.

M. T. SMITH, Shell Oil Co.'s crude oil representative for the Midland area since 1947, has elected to take an early retirement. Smith, who has been with Shell for the past 23 years, will retire Sept. 1.

J. L. STAUSS, vice-president and treasurer of Falcon Seaboard Drilling Co., Tulsa, has been named vice-president of the American Assn. of Oilwell Drilling Contractors for the Mid-Continent area. He succeeds **F. G. McClintock,** who was formerly president of Zephyr Drilling Co., and who is now associated with the First National Bank & Trust Co., Tulsa. Stauss is also president of D & D Drilling & Construction Co. C.A., of Venezuela, a Falcon Seaboard subsidiary.

J. L. Stauss

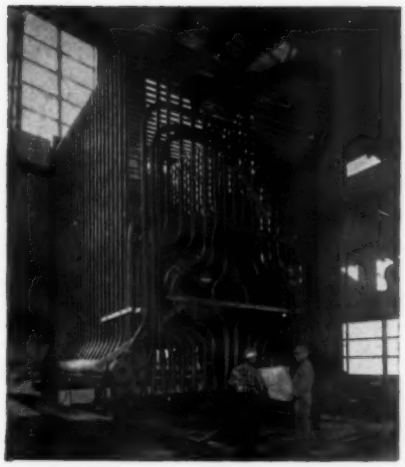
R. L. Adams

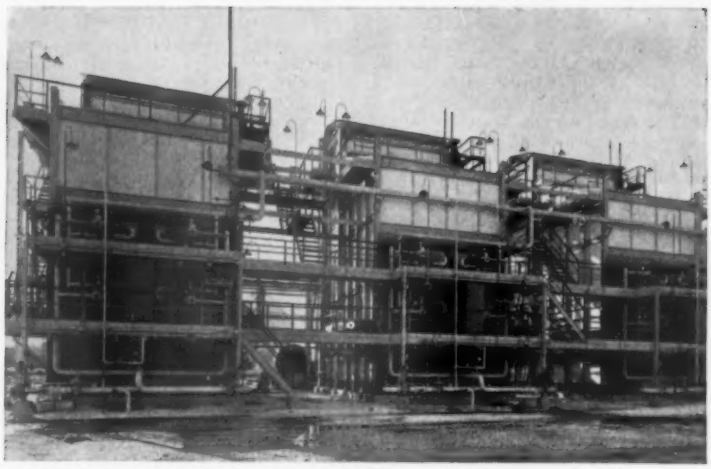
R. L. ADAMS has been promoted to manager of production for Continental Oil Co.'s CATC marine region, with headquarters in Houston. Adams was most recently production superintendent of Conoco's Roswell (N.M.) division. He succeeds **S. V. McCollum,** who recently resigned.

S. V. McCOLLUM becomes manager of offshore operations for Tennessee Gas & Oil Co., Houston, division of Tennessee Gas Transmission Co. McCollum has been production manager for the CATC group for the past 3½ years. Before that, he was assistant production manager for the South Texas region of Continental Oil Co.

ROBERT L. KELLEY has been named to the newly created position of coordinator of production accounting for Sun Oil Co., Philadelphia. Kelley, with Sun since 1942, was most recently a member of the comptroller's staff.

CECIL A. COLVILLE is the new administrative assistant to the management of Sun Oil Co.'s Southwest production division, in Dallas. He has been district operating superintendent for the Midland district, supervising Sun's drilling and producing operations in West Texas and New Mexico. **E. Lloyd Kownslar,** formerly assistant district superintendent in Corpus Christi, succeeds Colville in Midland. **Jack B. Higginbotham,** area superintendent at Robert Lee, West Texas, moves to Corpus Christi to succeed Kownslar. **Robert K. Beggs** replaces Higginbotham at Robert Lee, and **Claude W. Underwood** replaces Beggs as assistant area superintendent in charge of the Gainesville area,





AT LEFT: Installing a 60,000 lbs/hr unit in a brewery

ABOVE: A battery of 125,000 lbs/hr units in a chemical plant

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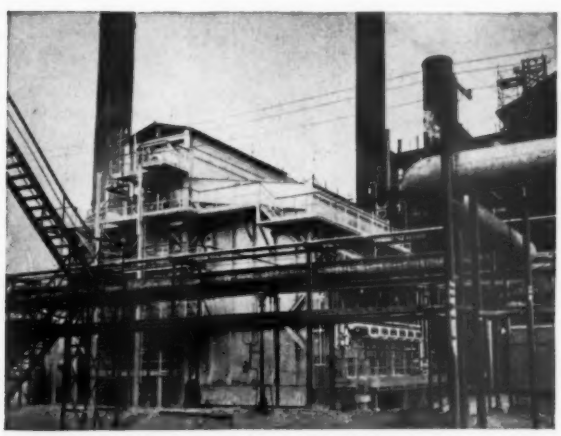
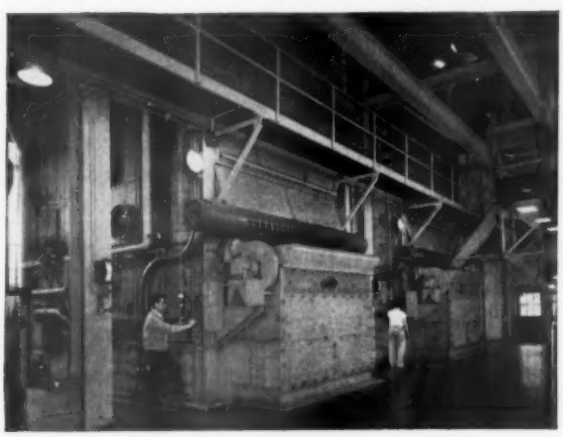


This 400,000 lbs/hr unit is installed in a leading petroleum refinery



Three 40,000 lbs/hr units serve a medical center

North Texas. Underwood was formerly assistant district superintendent at McAllen, in the Rio Grande valley. **Cleo Alexander**, area superintendent at Sun Field, Starr County, succeeds Underwood at McAllen. **Frank A. Lawrence**, assistant to the regional superintendent in the Dallas office, succeeds Alexander at Sun Field.

F. J. STUBBS moves up to assistant to the president of Interprovincial Pipe Line Co., with offices in Toronto. He was formerly assistant general manager at Interprovincial's offices in Edmonton.

HOWARD P. FERGUSON, manager of wholesale and subsidiary sales for Standard Oil Co. (Ohio), is the new president of Fleet-Wing Corp., Sohio marketing subsidiary, in Cleveland. **George H. Pugh**, now merchandising manager for Fleet-Wing, became vice-president and general manager of that company on July 1. Pugh will be the operating head of Fleet-Wing. **Luke L. Loufman** continues as sales manager for the company, and becomes assistant to the new president.

J. FLOYD LADD is the new treasurer of DX Sunray Oil Co., and **LEWIS LACY** is the new secretary. **L. Millard Gelvin** is the new assistant treasurer. Ladd succeeds **B. P. (Bert) Lambert**, who is retiring. Ladd, most recently assistant treasurer for DX Sunray, will also continue as assistant treasurer of Sunray Mid-Continent Oil Co., DX Sunray's parent. Lacy and Gelvin also hold the same positions with the parent company as they do with the subsidiary.

HAROLD SVOBODA, manager of production of Sunset International Petroleum Corp., Beverly Hills, Calif., has been elected vice-president. Svoboda, who continues to be in charge of all oil and gas production, joined Sunset as a petroleum engineer seven years ago.

RAY THOMAS has been appointed vice-president, marketing, for Champlin Oil & Refining Co., Ft. Worth. He replaces **J. A. Doctor**, who resigned to become marketing vice-president for Vickers Petroleum Co., Wichita, Kan. Thomas has been manager of division sales at Champlin's Ft. Worth headquarters since 1956. He joined the company in 1954 as coordinator of sales at Enid, Okla. At the same time, **Ed Hardin** was named general sales manager at Ft. Worth for Champlin, and **John Dewell** manager of division sales there. Hardin has been manager of general office sales since he joined the company in 1954. Dewell, with Champlin since 1956, has been division manager of the Oklahoma City division since 1957.

R. Thomas

H. D. Stanley

H. D. STANLEY has been named to the newly created position of costs and pricing economist for DX Sunray Oil Co.'s marketing department, in Tulsa. He was previously associated with Phillips Petroleum Co., in Bartlesville, Okla. Before that, he worked for Mid-Continent Petroleum Corp., predecessor company of DX Sunray. In his new position, Stanley will be responsible for the development of general price structures on all products in conformance with manufacturing, packaging, and distribution costs.

JOHN B. STOBBART is the new solvent coordinator in general office sales for Standard Oil Co. (Ohio), with offices in Cleveland. He will develop the sales of special naphthas and solvents. Stobbart joined Sohio in 1955 as a technical product specialist on solvents.

WILLIAM W. RICHARDSON has been appointed comptroller of Mobil Oil Co., domestic operating division of Socony Mobil Oil Co., with offices in New York. He will also continue to serve in his present post as assistant comptroller of Socony.

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Lubricated plug valves with special coatings on plugs and bodies make iron valves highly corrosion resistant at a fraction of the cost of special alloy valves. Rockwell-Nordstrom valves, shown above, are now available with Kanigen (applied by General American Transportation Corp.) coatings which give iron the corrosion resistance of nickel and stainless steel. Penton coatings (patented by National Polymer, Inc.) are also available for protecting valves against most acids, caustics, brines, and inorganic solvents. The new Rockwell-Nordstrom coated valves have been fully field tested on a wide range of petroleum production, refining and marketing services. For complete details: write Rockwell Manufacturing Company, Pittsburgh 8, Pa.

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– Eugene Holman, Chairman of the Board

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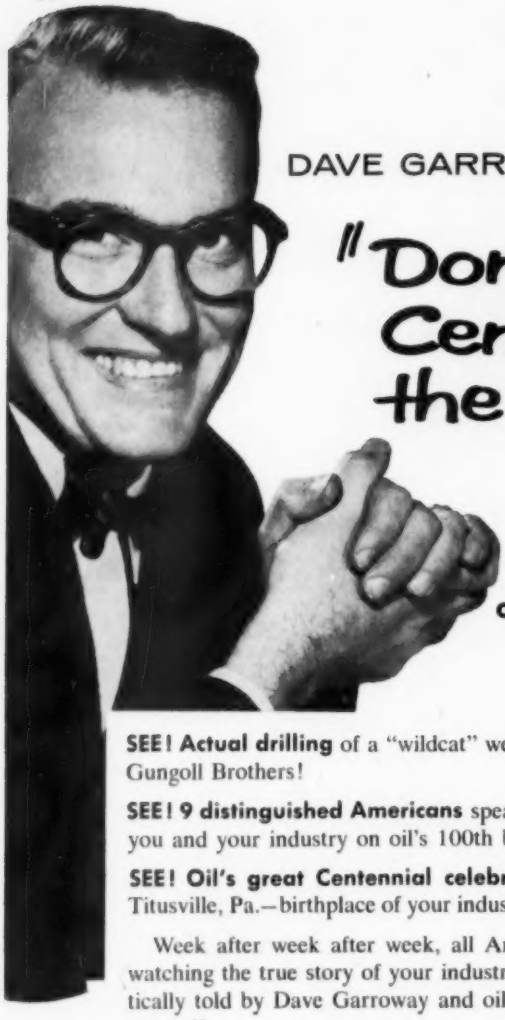

DAVE GARROWAY SAYS:

"Don't miss your own Centennial story on the today show! NBC-TV!"

On the air now! A series of dramatic, on-the-spot reports telling the real story of oil and oil's first century.

SEE! Actual drilling of a "wildcat" well by the Gungoll Brothers!

SEE! 9 distinguished Americans speak up for you and your industry on oil's 100th birthday!

SEE! Oil's great Centennial celebration in Titusville, Pa.—birthplace of your industry!

Week after week after week, all America is watching the true story of your industry, realistically told by Dave Garroway and oilmen like yourself.

The TODAY Show has already presented the fabulous International Oil Exposition with oilmen from all over the world. Now you'll meet the Gungoll Brothers and their family and fellow workers . . . "wildcatters" who will take you along to northwest Oklahoma in their search for oil.

You'll share their dreams, their gambles and witness the actual drilling of their well, "Big Dave #1."

On August 27th, you'll see oil's great Centennial celebration, direct from Titusville, Pa.—the birthplace of your industry.

See this exciting new series with your family on June 25, July 2, 16, 30, August 13 and 27. Tell your neighbors and customers to see it, too! See the TODAY Show from 7-9 a.m. on the above dates on your local NBC-TV station!

All summer long, these 9 distinguished Americans will wish a happy 100th birthday to you and your industry:

R. S. OUSTERHOUT, assistant general sales manager for the Dowell Division of Dow Chemical Co., transfers from Tulsa to Dallas where he will supervise the Dallas-Ft. Worth sales offices. Ousterhout, with Dowell since 1943, became Permian Basin district sales manager at Midland in 1952. In 1953 he moved to the company's general offices in Tulsa. He has been assistant general sales manager since 1957. **C. R. Olson,** who has been in the Dallas office since 1955, moves to the head office of Dowell of Canada, Ltd., Calgary. Olson, with Dowell since 1947, was named district sales engineer in Oklahoma City in 1953. He has been general sales engineer since 1955. **W. C. Atkin** transfers from Calgary to Dowell's general office in Tulsa, where he will join the industrial sales department. Atkin has been district sales manager for Dowell in Calgary since 1955. Before that he was on special assignment for Dowell in Houston.

C. R. Spencer

R. S. Ousterhout

C. ROSS SPENCER has been appointed to the newly created position of manager of special projects for W-K-M, a division of ACF Industries, Inc., Missouri City, Tex. Spencer was formerly associated with Oil Center Tool Co. and, prior to that, was with National Supply Company.

C. M. PETERS has been appointed vice-president, sales engineering, for Garrett Oil Tools Division of U. S. Industries, Inc. In this position, Peters will be in charge of Garrett's operations in Europe and the sterling currency areas. He has been with Garrett since 1938, and has served as vice-president, engineering, since 1956. **V. B. Scott** has been named manager of product development, with responsibility for the activities of the company's engineering department and special projects. Scott, with Garrett since 1953, was most recently manager of special projects. At the same time, **B. A. Abercrombie** was appointed administrative engineer for product testing and evaluation, and **F. L. Magoon** administrative engineer for research and development.

PETER R. McARTHUR has joined Ralph M. Parsons Co., engineering and construction company in Los Angeles. He will be responsible for business developments in the petroleum, chemical, and petrochemical industries.

CHARLES H. CREASSER is the new vice-president in charge of manufacturing for Walworth Co., with offices in New York. In his new capacity, Creasser will report to Walworth's president, **John C. Wallace,** and will be responsible for the activities of the company's four plants. He was most recently general manager of Combustion Engineering Corp.'s Raymond division in East Chicago, Ind. and Chicago, Ill.

JOHN N. DONHAISER has joined Houston Oil Field Material Co. as coordinator of research and development. Earlier this year, Donhaiser was retained as an independent consulting engineer by Pan American International Oil Co. Before that, he worked as a field engineer and division mechanical engineer for Pure Oil Co., and as assistant manager and chief engineer for Coastal Marine Drilling & Construction Corp.

J. N. Donhaiser

F. N. Harris

FRANCIS N. HARRIS becomes staff engineer for chemical services in Halliburton Oil Well Cementing Co.'s production improvements section, at Duncan, Okla. Harris, with Halliburton since 1946, was most recently a member of the analytical section of the chemical research and development laboratories at Duncan.

WILLIAM H. KERIN, JR., has been elected vice-president in charge of Peticon Division-Franklin Supply C.A., newly acquired subsidiary of Franklin Supply Co., in Maracaibo, Venezuela. Kerin was formerly manager of stores for the parent company in Denver. **H. Russell Smith,** formerly district manager for Franklin in Tulsa, will be general manager of the new subsidiary, and **Lee Croger,** formerly store manager at Harvey, La., will be manager of stores. The new subsidiary, formerly called Petroleum Industry Consultants C.A., (Peticon), was purchased from Servicios Hydrocarb C.A.

MALONEY-CRAWFORD TANK & MFG. CO. has purchased the Union Tank Division of Butler Mfg. Co., in Houston. Butler will retain the Houston plant for a limited period, and will continue to manufacture products for Maloney-Crawford during that time. Union Tank's engineering, product, and field sales operations will be integrated with Maloney-Crawford's Tulsa headquarters. **William H. Land,** newly appointed vice-president and sales manager of Maloney-Crawford, will direct the combined sales force and service operations.

GEORGE E. KOPETZ and **ARTHUR E. MURTON** are assuming new responsibilities with Blaw-Knox Co., Pittsburgh. Kopetz, formerly vice-president of production, has been named vice-president and general manager of the newly formed fabrication, engineering, and construction group. Murton, formerly roll sales vice-president, has been appointed vice-president and general manager of the new foundry and mill machinery group.

D. GREGG CUMMINGS is the new assistant advertising manager of the Electro-Motive Division of General Motors Corp., with headquarters in La Grange, Ill. He joined the parts department of Electro-Motive in 1941. In 1954, he became merchandising specialist in the division's sales promotion section, and in 1956, he joined the public relations staff as exhibit manager. He will continue to be in charge of exhibits and of the division's general information service.

I. C. ROWE is head of Rockwell Mfg. Co.'s new governmental relations department in Pittsburgh. The new department will be responsible for keeping abreast of legislative, politi-

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cal, and tax affairs in the United States and throughout the world. Rowe has been corporate secretary.

WAYNE THOMPSON has been appointed manager of the West Texas division of Tuboscope Co. He was division sales manager and assistant division manager in West Texas prior to his promotion. Thompson joined the company in 1952 as an operator, and went into sales in 1955.

W. Thompson

K. C. Snyder

KEITH C. SNYDER is the New Canadian representative for Mission Mfg. Co., with offices in Edmonton, Alta. Snyder was associated with Jones & Laughlin Supply Division and Drexel Canadian Equipment, Ltd., before joining Mission.

CLYDE M. HORAN is general superintendent of basic steel operations at Youngstown Sheet & Tube Co.'s Indiana Harbor (Ind.) and South Chicago works and **DONALD M. LLOYD** is general superintendent of steel plant rolling and finishing mills, at Indiana Harbor. The positions filled by Horan and Lloyd are new ones, which divide responsibility for basic steel production and rolling and finishing operations. At the same time, **Robert M. McCafferty** was promoted to superintendent of continuous butt weld tube mills at Indiana Harbor. **Charles W. White, Jr.**, was named superintendent of bloom, billet, bar, and skelp mills at Indiana Harbor. Horan was most recently general superintendent of steel plant operations at Indiana Harbor, and Lloyd was superintendent of the continuous butt weld tube mill there. McCafferty, who succeeds Lloyd, was most recently assistant superintendent of maintenance in the tube mills. White has been with Youngstown since 1955.

FRANK A. NOWAK has been appointed regional manager of the midwestern division of American Marc, Inc., California manufacturer of natural gas engines, diesel engines, generators, and generator sets. Nowak was most recently sales manager of a midwest supply company. Prior to that, he was a mechanical engineer for International Harvester Co.

S. M. JONES CO., a division of Buffalo-Eclipse Corp., has appointed Franklin Supply Co., Export Division, Inc., as export reresentative for its Jones sucker rods and related products. Franklin's export services are handled from offices in New York City. Franklin recently purchased Petroleum Consultants C.A. (Peticon), an equipment supplier in Venezuela. Franklin's new division has warehouses at Maracaibo, Anaco, and Barinas, and an office in Caracas.

RICHARD M. KLAUS has been appointed chief engineer for OPW Corp., Cincinnati, manufacturer of valves, fittings, and assemblies for handling hazardous liquids. He has been assistant to the vice-president of engineering since 1955. In his new position, he will be responsible for the design and development of OPW products, and will head the company's quality control department.

ERNEST HOLY and **SIDNEY A. ADGER** have been elected directors of Milwhite Mud Sales Co. Holy is the company's administrative vice-president, and Adger is vice-president of Public relations and sales. Both men are headquartered in Houston.

T. S. (Nick) LANCASTER has joined Western Co. as division sales representative in Oklahoma City. He was most recently regional sales representative in Oklahoma City for BJ Service, Inc.

T. S. Lancaster

C. Jarvis

CASEY JARVIS has formed a new company in Corona del Mar, Calif., called Jarco Engineering. The company will design and fabricate transportation and storage equipment for the trucking, LP-Gas, cryogenic, and compressed gas industries.

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Boston 6 — Donald R. Thompson, 350 Park Square Bldg., Hubbard 2-7160

Chicago 11 — Edward A. Callahan Jr., H. Sherman Davis, 520 North Michigan Avenue, Mohawk 4-5800

Cleveland 15 — J. E. MacArthur, 1164 Illuminating Bldg., 55 Public Square, Superior 1-7000

Denver 2 — J. W. Patten, Mile High Center, 1740 Broadway, Alpine 5-2981

Houston 25 — D. O. Hanson, 724 Prudential Bldg., Jackson 6-1281

Los Angeles 17 — Peter S. Carberry, 1125 W. Sixth St., Huntley 2-5450

New York 36 — Donald R. Thompson, 500 Fifth Ave., Oxford 5-5959

Philadelphia 3 — W. A. Potter, 6 Penn Center Plaza, Locust 8-4330

San Francisco 4 — William C. Woolston, 69 Post Street, Douglas 2-4600

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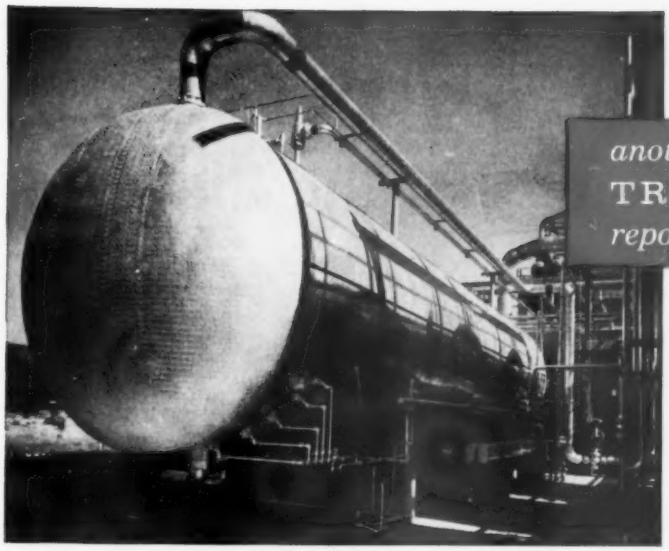

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report

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*TRET-O-LITE *is a registered trade-mark of Petrolite Corporation*

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Mechanics Wrong, Not the Purpose

IT IS DOUBTFUL if anyone in the industry has any quarrel with the purpose of the mandatory import control plan, which is to protect the domestic producing industry in the interest of national security.

But there is considerable disagreement over the mechanics of the plan. The feeling, generally, is that instead of merely protecting the domestic producing industry, the program actually is a windfall for inland refiners.

Testimony at the recent hearings before the Federal District Court in Houston substantiates this feeling. It showed that inland refiners are realizing, in effect, around 80¢ per bbl. in the exchange deals for their crude quotas. In other words, this money is received simply because they happen to be in the refining business, even though they can not utilize in their own refineries the quotas on foreign oil assigned to them.

EVERY REFINER RECEIVING A QUOTA should be able to utilize the crude in his own plant, no matter how he gets the oil to his plant. It could be by rail, air, pipeline—or piggy back.

But if the crude can not be utilized, then the quota should be tossed back into the pot for distribution among refiners who can use it. If this were done, there would be far fewer appeals on the program, and unquestionably fewer court attacks.

Why Ignore the U.S. Oil Industry?

PRESIDENT EISENHOWER'S SURPRISE VISIT to the Soviet Cultural Exposition in New York's Coliseum last week left many American oil men blinking in wonderment. With appropriate fanfare and panoply, the President toured the exposition, sipped wine with the Soviet Deputy Premier and generally enjoyed himself. With him were Vice-President Nixon and lesser officials, a top-flight American delegation, all in the name of international amity and understanding.

Little more than four weeks ago, another exposition and meeting held forth in the vast Coliseum. That was the Fifth World Petroleum Congress, a top-level international scientific meeting which drew attendance from 53 countries around the world. But did Eisenhower—or any leading government official, for that matter—attend this conclave? Nary a one. The best that could be had was a White House letter expressing greetings and salutations.

As a matter of fact, the American government was conspicious by its absence. Is there any wonder American oil men—who outdid themselves to make the Fifth World Petroleum Congress an outstanding showcase of coordination, cooperation, and understanding—are puzzled, and perhaps a bit dismayed (again) by the White House?

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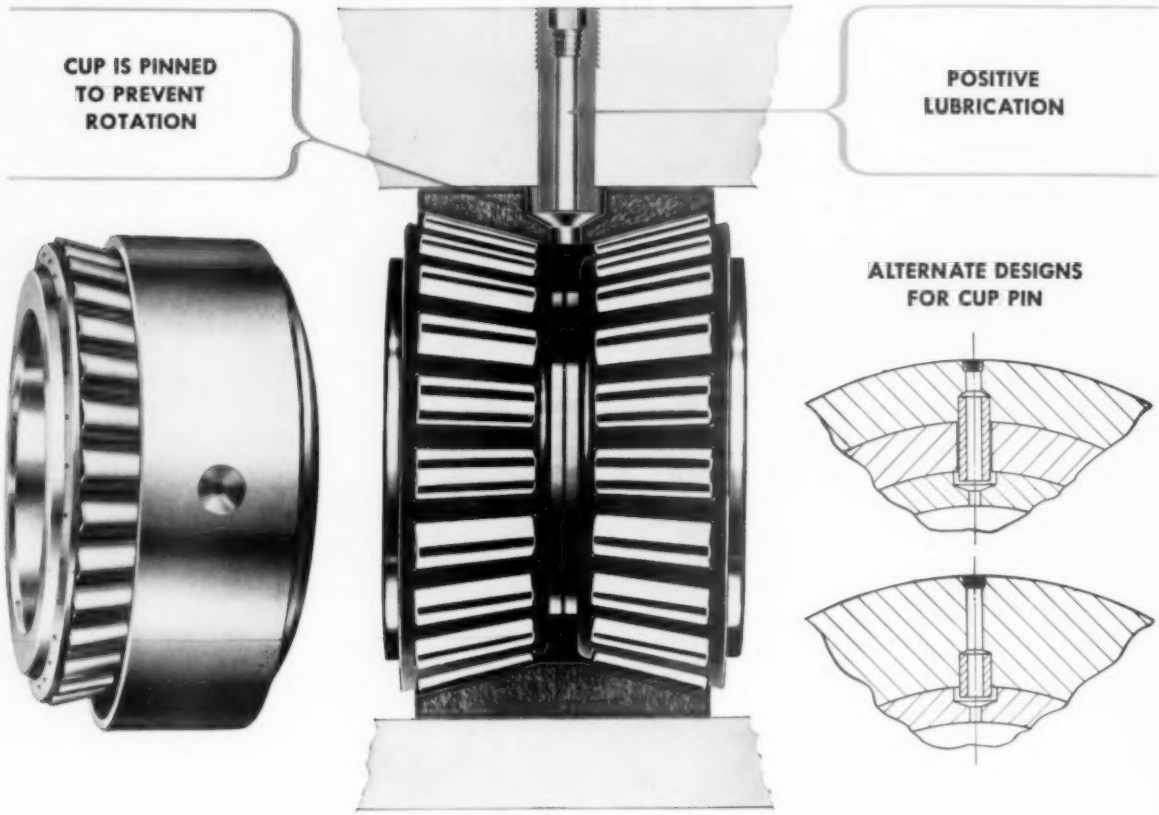

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1) *Positive lubrication* because oil is fed continuously through the pin.

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This new pin-cup bearing results from Timken bearing research and development. Research to make machines perform better at lower cost. And the combined, new $2½ million engineering and research facilities of the Timken Company, unique in the industry, make progress like this possible. Make it yours when you use Timken bearings in the machines you build or buy. Another reason why "Timken" is your No. 1 bearing value. The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.

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